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Charles R. Christianson

EDITOR
Doug Cotton

TECHNICAL EDITOR
Mark Fellows

ADVERTISING SALES
Charles A. Christianson
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Doug Cotton

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FROM THE EDITOR...

So here it is, proof that we have indeed survived the demise of Commodore. Not that there was any doubt, mind you, but I get calls all the time from users wondering how the fall of Commodore will affect us. I even had one caller who seemed genuinely surprised that anyone answered the phone! I guess we just can't state it loud enough for everyone to hear, but Commodore has ignored the 8-bit market for so long that they hardly seem necessary for the market to continue on.

I've had some other calls where I've been asked if Commodore World's parent company (CMD) plans to buy the 8-bit product line through the liquidation of Commodore's assets that is currently going on. From what we know of the liquidation, this would not even be possible, as the liquidators plan to sell everything in one lump to a single bidder. We're talking millions of dollars here, folks—so this isn't really an option to anyone interested in just the 8-bit product line. CMD will, of course, contact the new owners once the dust has settled, and we'll report on any news that emerges from that. But for now, we're all in the same waiting game, to see just who will end up with what's left of Commodore, and what they'll do with it.

Okay, with all that out of the way, let's get on with the new issue of Commodore World that you're holding in your hands. You might notice that we've slipped Commodore Trivia into our regular departments. We'll feature these little tidbits from Jim Brain in each issue now. You will notice one difference, though—the answers to the questions that appear in this issue won't be printed until next issue. Okay, call it cruelty, or whatever—we just felt that it would be more challenging for you if you didn't have the answers within easy reach.

We've also got the very first look at the new CMD SmartTrack, which just started shipping this month. Les Songa has done an expert job at testing this new device, and has some interesting comments on it.

There's also a review of the innovative new digital sound editor from Autumn Technologies, Digimaster. Not only that, but we've also presented the author's schematic for building your own hardware sound digitizer in this issue. Combined with Digimaster, the digitizer will allow you to digitally record sounds with an amazing amount of clarity. In this stage of the Commodore 64/128 lifetime, this is truly a development of mammoth proportion.

You might notice one other thing that's very different in this issue of Commodore World—screen shots! Yes, we finally got equipped to handle these, so you'll be seeing them regularly in future issues. Speaking of which, I think I hear Issue 4 calling my name...

Doug Cotton
Commodore World Editor

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BACKTALK

COMMODORE WORLD READERS SHARE THEIR THOUGHTS

Overwhelming Response

If our mail is any indication, your new magazine is a big hit! Our Users Group was not prepared for the large response to your mentioning our collection of Commodore 128 Public Domain and Shareware software (the 20 disk "Tipton Collection"). The requests have taken us quite by surprise but we have hustled and filled the orders as fast as we could. We are thrilled there are so many people still interested in Commodore computers.

Joi Ball, Secretary
MPCUG

P.S. It would have been nice, since you printed our club name and address in the article on page 4, to have included us in your Users Group listing on page 12!

Also, you might want to remind everybody that when they write to a Users Group for information, a self-addressed, stamped envelope or at least a 29¢ stamp would be greatly appreciated. Most Users Groups are small and working on a limited budget. While 29¢ isn't much by itself, when we get several requests all at once, it does mount up to sizable sum.

We'd love to add your group to our list, but we do require that all groups listed provide us with certain information. Please see the paragraph found at the end of our User Group Connection for details.

- Ed.

Warm & Fuzzy SCSI

To add to your info file, and for anyone else who might run into the problem... I've solved my problem with hooking that Quantum 240 meg mech up to the HD—due in part to your article in the 2nd issue of Commodore World, which arrived today. Read it, got thinking about the terminator resistors, called the guy I'd bought the drive from and found that the terminators on my mech weren't original. He had several of the same mechs, but only one had its resistors. He took it to a local parts store, they had "read" the values of the good one, and sold him "comparable" replacements. Nope. When I pulled the resistors off another dead Quantum mech and tried 'em on the 240, it was recognized fine!

His DOS SCSI card recognized the subbed resistors, and the CMD interface recognized it as a daisy-chain device, but not as a primary. Live and learn (and forget next week).

George Page

I Need Some Space

I object strenuously that the "CHK-LIST" program is sensitive to spaces. I hate code without spaces!

J. H. Smalley

While we can understand your point-of-view, there are good reasons for the program to be sensitive to spaces; in some programs, there are indeed places in the code where spaces absolutely must be present for the code to work correctly, or for displays to be properly formatted. Removing the sensitivity to spaces from CHK-LIST would mean that errors in entering those particular lines could creep through.

- Ed.

Where's The End?

I got my copy of issue #2 last week, and am very impressed. You folks did an excellent job as usual. Who built the CMD race car? Won any races with it? :-)

One small suggestion: I would like to see some sort of "bullet" or graphic indicator added to mark the end of articles. Many of the articles are signed by the contributors at the end of the article, for example in *The Connection* area. However, the other articles, such as *Just For Starters*, *Special Report*, *Graphic Interpretation*, and *geoProgrammist* have no signature at the end, since is it part of the column masthead.

A small block, or even a stylized "CW" at the end of the article would help slow people like me realize the article is finished, and stop me from flipping over pages to see where it is continued.

By the way, I really appreciate how you have kept the articles together. It must have been quite a lot of work. Another magazine I read drives me nuts, as nearly every article is continued 40 pages later for one lousy paragraph, or single column. I enjoyed not having my flow of reading broken up.

Thanks for all the hard work!

Jim Dearden

The car belongs to Maurice Randall, who has been involved in racing for a number of years. To my knowledge, he has only raced it once since adding the CMD logos, and blew the engine early on in that race. Due to running late with Issue 2, we skipped working in the dingbats at the end of articles. We'll attempt to get these back in for future issues.

- Ed.

Vote of Confidence

Your answer to Darla Smith in Just Asking [*CW Issue 2*] when asked what software you use to produce *Commodore World* shows the rest of the world the great credibility of CMD and *Commodore World*. Please "live long and prosper", we need you!

Charlie Colwell

ERROR CORRECTION

In Issue 2 of Commodore World, one of the listings in Advanced Techniques was processed incorrectly, and contained an error. The listing appeared in the right hand column on page 44, and the line containing the error was line 10. Fortunately, most of our readers appeared to notice that this line was supposed to be identical to the line 10 given in the left column on the same page. This error was first pointed out to Commodore World by Ed Bell; thanks, Ed. For the record, line 10 should have looked like this:

```
686B 10 PRINTCHR$(147):F=ABS(PEEK(65533)=255
    ):M=0:IFPTHENM=ABS(PEEK(215)>127):IFMTHE
    NPAST:WINDOW20,0,59,24
```


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JUST ASKING

THE COMMODORE WORLD STAFF LOOKS FOR ANSWERS TO USERS' QUESTIONS

Q When the Commodore 1902 [monitor] that I got with my used system gave it up, a long search finally (whew!) uncovered a Magnavox RGBI 80-column unit which is working fine (knock wood). During the time I was looking, I read some information that led me to believe that an IBM CGA-type monitor might work with my C128. Is that possible? I realize that a setup like that could work *only* in 80-column mode, but is it doable? CGA monitors still seem to be generally available—Radio Shack even sells new ones. What are your thoughts on this?

John P. LaDez

A The information you read is quite correct. Back when it was common for MS-DOS machines to use the CGA display mode, Magnavox RGB-80 monitors were commonly used on those machines as well as on Commodore 64's and 128's. Other monitors made specifically for the MS-DOS machines typically didn't have the composite inputs that the Magnavox has (used for the 64's and 128's 40-column modes), but the 80-column RGBI mode which they did have is fully compatible with the Commodore 128's 80-column output.

Q After many years of relatively problem-free operation of my Commodore 64C system which included two 1541-II drives, I decided to upgrade to a C128 system...

Along with my system upgrade, I of course purchased GEOS 128 version 2.0. ...My problem is not with GEOS per se, but trying to get it to print out according to my wishes and the capabilities of both GEOS and my printer. My son graciously donated an excellent Panasonic KX-P1123 24-pin printer.

I have enclosed several printouts of a file (Read Me Second) that is included with the GEOS package. On checking the file's format when I received it, it was typed in BSW128 (9Pts) and plain text. I no longer have the first printout, but it was similar in appearance to the other info file that is on disk—with reference to printers. The original printout of the "Read Me Second" file was three 'pages' long. Each 'page' was

approximately 1 ½ sheets in length. Subsequent printout of this file have changed to four and finally to five pages long. And as you can observe, most are longer than a sheet in length.

...I have selected the LQ-1500 printer driver from the GEOS options. A copy of this driver is located both on the boot disk and on the disk containing the subject files. ...When the print options page appears after selecting 'print', I selected Draft. The window on Desktop indicated that the file was three pages in length. And so it was, but printed out in the fashion described in my previous paragraph. I talked to someone named Doug at CMD and he advised [me] not to select draft at the print option, but to leave it at High. I did and the result is what you see enclosed and annotated. It printed out on 5 sheets. It took an incredible amount of time to print out. It printed in one direction only—left to right. The pages to my estimation are over filled, and for some unknown reason (to me), changed format approximately halfway down page 2!

The format appears to be totally different from that when printed in draft mode. The format according to the file itself is approximately that printed in High Res. Prior to printout in draft mode, the format was checked and according to the file it was not altered, however the result you will no doubt see on the printouts are somehow altered.

I have included several printouts of different settings. Three of these were in NLQ mode. Notice the change halfway through the printout! I need help.

J. E. Avery

A Upon close examination of your print-outs, and consideration of your comments, I can only conclude that there have been some changes made in your document. But the real problem is that you're just not yet familiar with how geoWrite operates.

Let's tackle your document problem first. As you indicated in your letter, the NLQ printouts do indeed change partway through. This is not a quirk of GEOS or your hardware—geoWrite is doing what it is being instructed to do. At this point in your document, you apparently made some kind of change in the font being used.

You can verify this easily enough. Do this: select a single character by dragging the pointer over it from left to right while holding down the left mouse button. This will select the area you drag the pointer over, and that area should show up as 'reversed'. Now pull down the font menu and note which font name has an asterisk to the left of it. You can also examine the style menu this way. Now move to a page where the text in your printout appeared to be altered, and select a character of that text. Again, examine the font and style menus. You should notice something different between the two selections you examined.

You can easily fix this mismatch. Starting on the first page of the document, choose the 'select page' option from the options menu. Now use the font and style menus to define the text into a specific font and style. After you have accomplished this on the first page, move to the second page and repeat this operation. Do this on each page of your document, moving page-by-page from the beginning to the end. So long as you make the same font and style selections on each page, your document will have consistent formatting when you've finished.

Now on to some of the other things you mentioned. Most of your questions and concerns spring from your unfamiliarity with how geoWrite prints. You must first understand that GEOS means Graphic Environment Operating System, and the first word of that is the key to how GEOS does things—graphically.

GeoWrite was made to do something most Commodore word processors could not—allow you to create documents using a vast library of

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typefaces (fonts) in a wide selection of sizes, and to proportionally space text. If you're not familiar with the terms proportional and monospaced as they apply to text, here's an example:

```
Proportional Text aiiMIO
Monospaced Text   aiiMIO
```

As you can see in the example, proportionally spaced text maintains a relatively equal amount of space from the end of one character to the beginning of the next. With monospaced text, however, the space between characters varies with the width of the characters—in other words, any character and its surrounding space is equal to the total space used by any other character. This means that there is generally more blank space in the makeup of a lowercase 'i' than there would be for a lowercase 'w', because the 'w' itself is generally wider than an 'i'.

The fonts built-into your printer are generally monospaced. While most modern printers have a certain amount of proportional printing capabilities, those capabilities are limited and require extensive programming.

GEOS achieves proportional spacing and the ability to use a large variety of fonts and point sizes by turning the characters you type into part of a graphical bit-map. This is akin to actually drawing a character shape in a drawing program. In such a program you can make the character any shape you want, and you can determine its size within the limitations of the work area.

In order to make the text appear on paper just as it does on the screen, GEOS has to print the page as if it were a picture—the location of each dot making up the screen must be sent to the printer for an accurate reproduction of the characters. This is what GEOS does when you select the 'High' quality print mode. It also only prints from left to right since bidirectional printing of graphic data tends to introduce a 'weaving' pattern as the paper is forced from side to side by the impact of the pins while the head is moving. This makes for slow printing, more so since GEOS has to send over 80 bytes to the printer to define just one row of dots (you can speed things up dramatically on a 24-pin printer with a GEOCABLE). Using printer fonts, this amount of data would print a complete line of text—but that method limits you to using those three or four fonts that the printer has.

When you print in Draft or NLQ modes, GEOS does use the printer's fonts. This can create problems, though, if not handled correctly. You see, if the document is formatted in a proportional font, a page will generally contain far more characters than the monospaced fonts in your printer can produce on a page. You'll have to format each page again (always work from the first page to the last in order) using the Commodore 10 point font. This is a monospaced font which is generally equivalent in the amount of space it uses to the fonts in your printer. You must also select 'NLQ spacing' from the page menu in geoWrite to make everything work correctly, but these modes do not support the styles used in the document (bold, italics, etc.).

JUST ASK!

Having trouble getting your system to do what you want it to, or think you've got something wrong with your hardware? *Just Asking* may be able to help find a solution, or get you pointed in the right direction. Send your questions to:

CW Just Asking
c/o Creative Micro Designs, Inc.
P.O. Box 646
East Longmeadow, MA 01028-0646

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Glen Doty/Phoenix1 - Chief Engineer

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   2400 baud: @D <return>
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4. At the @ sign type

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ON THE HORIZON

COMMODORE AND COMPUTER INDUSTRY NEWS

New Version of Compression Kit Announced

Mad Man Software has recently announced that they will release a new version of *The Compression Kit*, their disk and file archiving and backup utility for the C-64. We received the following information in June from company spokesperson Ryan Todd Vander Stoep:

> A new version of The Compression Kit is due for release this month. For those who are unfamiliar with this product, it consists of:
>
> - Filemaster - moves, copies and deletes files
> - Procopy - copies entire disks
> - Archiver - compressed backup of one or many files; has the ability to list files in an existing archive, and can de-archive files.
> - Boas (1541, 1571, 1581, CMD Native) - Compresses entire disks or partitions
>
> C-Kit Version 2.0 enhancements include:
>
> - A new, faster compression scheme dubbed 'PYTHON' which creates more compact archives
> - RAM device compatibility - can use the Commodore 17xx series RAM Expansion Units, DACC partitions on CMD RAM devices, and the additional memory in a Commodore 128
> - More selectable files - up to 800 files can now be selected in the archiver, and up to 1200 files in the filemaster

For further information on *The Compression Kit*, contact:

Mad Man Software
1400 East College Drive
Cheyenne, WY 82007
(307) 632-1178

Messiah III Update

Mad Man Software, makers of *The Compression Kit*, have recently passed on this news concerning *Messiah III: Nemesis*, a role-playing game which Mad Man has been developing:

> For all practical purposes, Messiah III is completed. We are currently examining options for funding the release of this program. This role-playing adventure game contains more than 10 screens, 25 levels, and 300 pictures. Playing time is estimated at more than 300 hours to complete. A prototype of a few levels has been previously reviewed by both RUN and Compute's Gazette.

Mad Man Software has assured *Commodore World* that they will keep us apprised of any change in the status of this product.

Threshold Productions Releases New Game

Threshold Productions, a new game producer for the C-64/128 market, has recently announced the release of their first game, *Lazer Dual*. Here is the information provided to Commodore World by Threshold representative Jonathon Mines:

> Lazer Duel, our first product, will begin shipping July 15, 1994. A two level playable preview is available by sending $2.00 (credited against purchase of the full version) to cover shipping and handling. The full version is available at two prices: $14.95 for non-user group members, and $9.95 for user group members. To get the user group discount you must have your treasurer or president send payment with letterhead of the group. Included with the full game is a coupon for a $5 discount off Lazer Duel II, which is now in the planning stages.
>
> We are also working on three other products; an RPG (first in a trilogy), a fast paced circuit type racing game, and a funny game with a little mischievous goblin.

You may contact Threshold concerning their products at the following:

Threshold Productions
18801 26th Ave. NE
Seattle, WA. 98155
(206) 361-1332 (message)
tpinfo@eskimo.com (Internet)

CMD Adds Action-Replay and More

RIO Computers recently announced that they would no longer be supplying Datel's Action-Replay cartridge; that's the bad news. The good news is that Creative Micro Designs has contacted Datel, and has arranged to begin selling this product. Action-Replay Mk VI is a utility cartridge for the Commodore 64 (or Commodore 128 in 64 mode) which includes functions for capturing programs and saving graphic screens; it also includes a sprite killer, sprite monitor, printer dump utility, machine language monitor, file and whole disk copiers, a pokefinder (for unlimited lives in games). Finally, the cartridge includes disk and tape fastloaders, adds several useful commands (MERGE, APPEND, OLD, DELETE, etc.) to BASIC, and will also redirect printer output for device 4 to a printer connected with a GEOCABLE.

While many of Action-Replay's disk functions cannot be used directly with CMD storage devices, CMD expressed excitement over the product's ability to de-protect software; programs de-protected in this manner can then be copied onto (and booted from) CMD storage devices. The ability to output documents with most programs via a GEOCABLE was another feature which CMD found appealing about the product. CMD plans to have Action-Replay in-stock by mid-August, and has set a selling price of $59.00 plus shipping.

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CMD has also announced that they are readying their new GEOCABLE II for release. Up until now, the GEOCABLE sold by CMD has been provided by Skyles Electric Works. CMD has decided to produce a new version with a switch for the pass-through port, enabling modems to remain attached while the connection to the printer is in use (this was not possible on the Skyles model, which included a pass-through port, but no switch). CMD expects the price of GEOCABLE II to be $29.00, and will include a disk containing GEOS printer drivers with each cable.

CMD has also added Aprotek modems and hardware to their product catalog, and began shipping the new SmartTrack proportional trackball in early August.

Q-Link Announces Shut-Down

The premier Commodore-only Quantum Link on-line service has finally announced that it will cease to operate on November 1, 1994. QLink was originally launched in November of 1985, but since its owners turned more of their attention to their America On-line for Macintosh and MS-DOS machines in the early 90's, the services and quality of the QLink system have continually declined.

Users with Lifetime memberships on QLink can transfer that membership to an America On-line account. This will, however, require that you have either an MS-DOS or Macintosh computer. To obtain a sign-on kit for America On-line, contact AOL Customer Service at 1-800-827-6364. After signing on, you must inform AOL Billing that you wish to transfer your QLink Lifetime Membership to your new AOL account.

Additional information concerning this shutdown, account transfers, billing, and use of accumulated Qpons may be obtained from messages posted in QLink's Customer Service area.

Loadstar Releases New Products

Loadstar, the disk-based publication for Commodore 64 and 128 owners, has recently announced two new products. The first of these is a large selection of graphics which has been produced for Loadstar over the years by veteran computer artist Walt Harned. Entitled "The Compleat Walt Harned", this collection contains over 250 pictures, and is available on seven 5½ inch disks, or three 3½ inch diskettes. Loadstar bills this as the greatest one-man collection of art on any computer platform. The price, according to Loadstar's Newsletter, is a mere $20.00. We're quick to point out that since Loadstar states that 'compleat' is a ten-dollar spelling of 'complete', this appears to be a pretty good deal.

The second product announced by Loadstar is novel idea... well, it's actually a novel itself, on disk. Entitled SPORT, this software-based book is equivalent to a paperback containing somewhere between 400-500 pages! Author Jeff Jones commented that publishers prefer not to publish large novels by authors who are not well known, so this seemed to him to be the best way to present the whole story. Billed as "Terror on disk!", advertising for SPORT in Loadstar's Newsletter warns that this story "contains graphic action sequences and frank language", and is "not for the faint of heart!" Loadstar can provide the novel on three 1541 disks, two 1581 disks, or one CMD FD high density disk. The cost is $5.95 plus $1.00 shipping.

Finally, Loadstar has also announced a bundling arrangement with CMD, which includes a one year subscription to Loadstar and a CMD FD-2000 disk drive. As a bonus, Loadstar also includes their CARDSTAR 1 and GAMESTAR 1 products, two of Loadstar's most popular disks. The cost of the entire package is $250.00 plus $10.00 shipping. An FD-4000 disk drive can be substituted for the FD-2000 for an additional $60.00.

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THE CONNECTION

News from Commodore-related Vendors and Publishers

LOADSTAR

Commodore's been dead for a while, and instead of *LOADSTAR* flaying for its life, our Customer Service Representatives (CSRs) are flooded with calls. CMD is going mad with daily floods of orders, and *dieHard* enjoys continued success. What's going on? Why are we so successful? Could it be that Commodore 64 users are very intimate with their computers? We don't ditch them just because something out there can add 2+2 thirty times as fast.

Commodore users program. Many who don't still have a good knowledge of their computer, and even know the chips (SID, VIC, 6510) by name. That's why *LOADSTAR* would dare consider compiling a programming disk set in 1994, more than a decade after the C-64 was pronounced dead. As I write this editorial, thousands of blocks of text, BASIC, ML and graphics tutorials, assemblers, languages and utilities from *LOADSTAR*'s past are sitting on a CMD HD partition, waiting to be organized into what will most likely be a very hot product to be released in late September. I have no idea how many disks it will encompass, but it will be THE book of Commodore knowledge. Not only will we supply the knowledge, but the tools (assemblers and languages) to create great software.

In late 1994 why would one bother to learn to program a computer pronounced dead in the 80's? For one thing, you can earn money! *LOADSTAR* buys tens of thousands of dollars worth of programs every year—even more than our IBM magazine! CMD buys programs, and so does *dieHard* and *CEE-64 Alive*. Before I was hired full time as a Commodore editor/programmer, I earned thousands free-lance programming. That was thousands more than the average know it all IBM user who told me to ditch my C-64.

Mastering "simple" 6502 language gives the programmer tools and logic that make programming other machines easier. The same for BASIC though to a lesser extent. Many may remember Scott Resh, our former *GEOS* expert. Never touched a MAC. Well, he was trained to work in our MAC department and instantly took to it. He already had the skills at a very primitive level that gave him understanding over what he was doing. Now he's earning big bucks in the Bahamas. If you ever find yourself programming on a 747 back and forth to the Bahamas, you've made it as a programmer.

Programming a C-64 is the ultimate puzzle. Coaxing a "simple" computer to do complex things requires logic and planning, two things you need to program good software. The other platforms have SO many standard tools to help the serious programmer program, that the ex-64 programmer thinks it's heaven. When I go to my 680x0 assembler, the opcodes seem like a high level language. Seasoned Macintosh programmers look at 680x0 assembly language as a "tough" "primitive" language that one shouldn't have to learn when there's always C. But when you want that extra edge, some companies like WordPerfect skip C and program in machine language for speed. When you want that screen rendered in two seconds instead of two hours, you want machine language. Many companies even advertise that a program is written in assembler.

In the MS-DOS world, C compilers have evolved, creating object code that rivals the speed of machine language, but at the expense of huge programs with libraries that fill the hard drive. I think that in the future it will be ex-C-64 ML programmers that will gladly learn Pentium and Power PC ML and write monster applications that take up less space and do just as much if not more. I urge the Pentium owners out there to break the mold. Kick C to the curb, and try ML on your other computers. Tell the world that they can thank the C-64 for your small fast programs.

If you're thinking about becoming a programmer, don't wait until you get that DOS machine and the expensive books and compilers you'll need. Try your C-64. Coax a program out of it. This may just be a sly ploy to promote our upcoming blockbuster phantasmagorical Programming disk set (get it) but if there is one message I can get across to fledgling programmers out there it's "Don't be afraid of Machine Language. It's a breeze."

- Jeff Jones
Associate Editor, LoadStar

CEE-64 Alive!

Last night, I had the pleasure of assisting a couple who had recently purchased a Commodore 128 to help them run their business. Trying to run a business and learn to use a new computer is never an easy thing to do, but for many small cottage industries, the Commodore still makes an excellent business choice because the machine itself doesn't cost a fortune. The productivity software is definitely available, whether it be commercial software bought new, or found used from garage sales or computer swap meets. There are also hundreds (perhaps thousands) of productivity software available as shareware, or in the public domain.

The couple I helped are running a small greenhouse and an herbal craft store to augment the greenhouse during the winter months. They needed some advice on what programs would best meet their needs. They asked specifically about the availability of a spreadsheet program, database, and programs for writing letters and one for labels. They stressed that they wanted more than just an address label program. I asked what they'd be creating labels for and discovered they had a variety of different types of labels they needed, such as for greenhouse plants as well as price tags. I recommended The *Fun Graphics Machine* so they could design different labels to suit their purposes. As the business grows, they will find

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other uses for this program, such as forms, advertising and business cards.

After making a list of the types of programs they would need to run their business, I talked to them about other things they might need, such as things they can use to speed the computer up, because the less time they spend working at the computer, the more time they can devote to customers and their plants in the greenhouse. We talked about cartridges but rejected the idea because their software would be used in both 64 and 128 modes, so cartridges would limit their use and cause additional confusion. They agreed JiffyDOS made sense since they wouldn't need to be concerned about which mode the computer is in and it would give them easier commands to use. We also discussed CMD's FD drives, RAMLink, and/or a hard drive so they could have easy access to their business software. While not quite ready for any of these items just yet, when their business picks up, one of these devices are definitely on their list of future computer upgrades.

I suppose you're asking what all this has to do with *CEE-64 Alive*? Plenty! First of all, we really enjoy helping new Commodore users. This is something that both Jack Vander White and I find ourselves doing whether it be via the mail, in person, or over the computer networks such as Fidonet. Often, a Commodore 64 is the first computer a person has ever used. People are sometimes intimidated by it simply because it's a computer. It's a nice feeling to help someone out and show them the ropes a little. Second, almost all of the business of operating *CEE-64 Alive!* is done on our Commodores. We do have an understanding of what's needed to run a business using the C64 and 128. Third, we're friendly and like helping people out.

We've got lots of goodies in Vol 3 Issue 3, including a trip to Antarctica to view a partial solar eclipse, an article explaining the basics of off-line mail reading, a great mini demo maker, and an article about a new kind of revolution destined to make your world a better place. Our newsletter disk is filled with the kind of information new users really need, as well as info that could even make some of us "old-timers" pause and think about. This is of course, the FAQ (Frequently Asked Questions) file from the COMP.SYS.CBM newsgroup on the Internet. This is over 500 disk blocks with a ton of C64/128 information in it. The flip side of our newsletter disk is filled to the brim with COMAL programs. We'll be taking a deeper look into COMAL programming in our future issues as well.

Until next time, CEE-ya!

- Gaelyne Moranec
Editor, CEE-64 Alive!

dieHard

That old flat top 128 just doesn't always boot up like it should. It is kinda temperamental, you know. Must just be old....

Or is it? Larry Pankey has some news for those of you who thought you just had to live with that fussy 128. And it's great news! He'll show you how to end those power-up blues!

Wondering about **commodore** support? Wonder no more. Doug Parsons has compiled a very accurate and up to date listing of many businesses that support our beloved 8-bit computers. Every bit of info on this list has been verified, and these places are current. We even have some overflow into the September issue of people who couldn't get back to us in time for deadline!

Mike Gordillo takes us into the jungles of CP/M formats and brings us into the light in Part I of *C128 CP/M, Trail Blazing in a Jungle of Formats*.

Professional looking color print outs from your little old printer? Yes! Jack Blewitt's *8-Bit 4-Pass Color Tutorial* shows you the method to color mania!

Alen Gardner takes a look at Block Allocation and the USER-1 Command in *DOS & Don'ts*. R. Scot Derrer's *Basic BASIC* strings us right along with TI and TIME$! The latest on what's happening on Delphi, an introduction, an announcement and more from R. J. Smulkowski's *Cyberspace Cowboy! PRG* features Ernest Barkman's **Text To Screen** and **Text To Printer**. These file readers have wordwrap and the **Text To Printer** has a paper save feature that replaces carriage returns with an underline character. This issue is packed.

The *PRG* feature game, entitled **Bongo** is among the **Spinner**-only files. This Bingo game will not only generate your cards, and call the numbers for you, it will keep track of everyone's cards! This is Ted Myers' masterpiece of **commodore** keyboard graphics.

Speaking of **Spinner**-only, after cranking up the air conditioning, boot up GEOS and take a look at Rick Hedrick's collection of mathematical grids. This is part one of his mathematical excursions. More for you hardened mathites—Eugene Heath's **String Arithmetic** (October 93 **Spinner**) comes to life with **Fibonacci 1.2**—calculate the 657th value in 32.4 seconds or view the sequence up to the 657th number, and **Sine, Cos, and PI**—calculate PI to 68 places! Create giant wireframes for use with **FGM**, with Rick Hedrick's **Giant Wireframe**.

Lots of stuff is happening this summer at LynnCarthy Industries, Inc. We're launching **The Sewing Room**, our new Associate Editor is starting, we're on Delphi and soon to be on GEnie! I'm dieHard0 on both Q-Link and Delphi! So little time, so much space—cyberspace, that is!

Well, gotta run! Keep cool this summer and may your lemonade never spill at your computer and may you always have a pile of blank formatted disks by your side—especially while on-line!

- Brian L. Crosthwaite, Editor

FUN GRAPHICS MACHINE

WARNING: Blowing up balloons can land you in the hospital! Your throat muscles can constrict blood flow to the brain, causing you to pass out and suffer a concussion by smashing your head against a concrete floor. I mention this because it recently happened to Jerry, hence I'm writing this month's FGM article. Jerry's "ok" but still feeling the effects (I never figured something as soft as concrete could hurt Jerry's head, but wonders never cease:).

Jerry had intended to get into the basics of working with graphics in FGM, but I'm going to leap on to LINKED SCREENS because they seem to cause the most confusion. LINKED SCREENS is simply an easier way of working with more than one screen at a time. A single screen will only print out four inches wide, max, unless you print it at double or triple width, and limits you on the amount of text and graphics you can use (duh). LINKED SCREENS lets you use up to three screens side by

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side, which is 120 columns of work space.

Go ahead and load FGM, go to CREATOR, and erase the screens. HINT: A fast and easy way to erase the screens is to use ADJUST Mode; press J, tap HOME to move the bar to the top, tap - (minus) to make the bar full-screen size, then press CTRL E. While still holding CTRL, release the E, press X for the next screen, then CTRL E to erase it. Repeat for the third screen. Then press RETURN a few times for the menu.

Set LINKED SCREENS by pressing / from the menu. This takes you to a sub-menu where you select how you want the screens linked. For now, select #2, then select ACROSS at the ACROSS/DOWN prompt. This gives us two screens linked across (side by side). Printed at 80 dpi (or 240 dpi triple width) these print out eight inches wide.

Go to the hi-res editor (press 4) and play around a bit. Press T for TEXT Mode and start typing periods... across the screen. When text hits the right side the viewing area will scroll right by twenty columns; you're now viewing the center area of the two screens, with twenty columns to the left and right not visible. Type an X here and continue typing periods until the viewing area scrolls again. You're now viewing the full second (right-hand) screen. If you continue typing past the right side, the viewing area will move back to the left screen. Use F3/F4 to move the viewing area left/right. Margins, word-wrap, and the third screen are available; READ THE MANUAL;).

Saving linked screens is easy; when you do a #6 SAVE both screens will be saved as individual screens, but named so FGM (and you) can identify them. The key is the third and fourth characters in the filename; these must be a letter and a number, ie: "s.a1". FGM will create names beginning with s.a2 and s.a3 for the other screens. The number identifies if it's screen 1-3 (left, center, right, when working with three screens linked across). The letter identifies how many screens down this set of across-linked screens is; when creating a full page you'll need several sets of screens down. Begin the name for the next set of screens down with s.b1, then s.c1 for the third set, etc. The PRINTER section uses the letters so it can load in a set of across-linked screens, print them, then load in the next set.

I'm over my word allotment for this month. Next month we'll wrap this dragon up, then find another one to slay. Happy Computing...

- Ron C. Hackley :)

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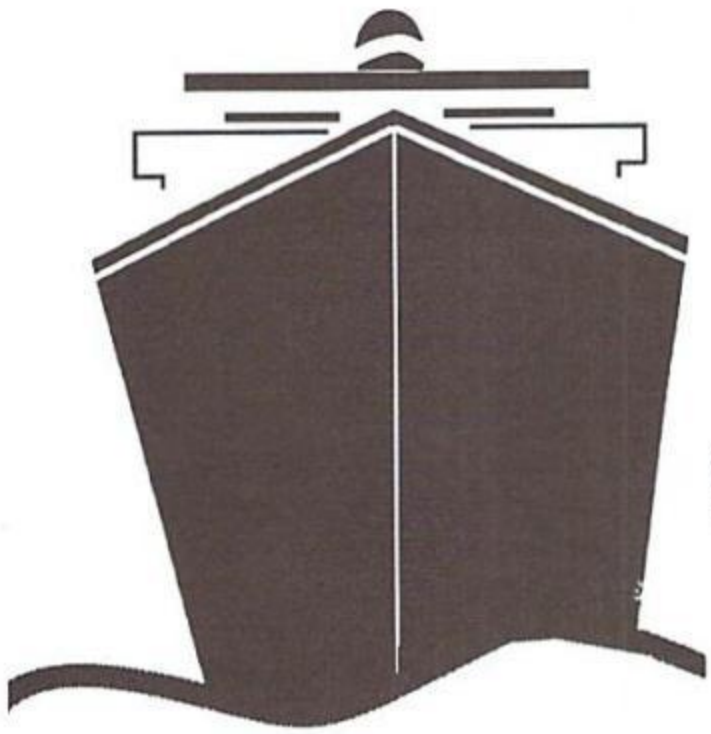

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Top Tips

FGM's Ron Hackley provides input on 24-pin output

If you have a 24-pin printer you may have discovered that it prints graphics somewhat taller than the same output from an 8-pin printer. This can be a very rude surprise, since you probably expected better graphics printouts. I've tried to get the word out with a sheet I include with FGM, but for the benefit of those who have not yet purchased this great program (shame on you!) I've put together this article for *Commodore World* to try and explain how to deal with 24-pin printers.

ESCaping Print Modes

The most widely offered solutions suggest entering *escape codes* to set the linefeed spacing before using the program. The big problem with this method is that the program is probably going to reset the linefeed spacing when it runs. Additionally, I've noticed that several different linefeed spacings have been offered. The correct escape code sequence for setting linefeed spacing for graphics is pretty universal: ESC 51 24 (ESC represents 27). This is correct for 8-pin printers, and for 24-pin printers in both Epson LQ and IBM Proprinter modes.

There is an easy way to get true 8-pin graphics emulation from most 24-pin printers; the key is IBM Proprinter mode with AGM OFF (more about AGM further on). Most (but not all) 24-pin printers have this capability. If your printer doesn't have this capability (Epson usually doesn't), then you're stuck unless you can motivate one of us Commodore programmers to write an emulator driver, and then it will likely

only work for the single program it's written for. My best recommendation, if you haven't had the printer too long, is to try and return it and get one that includes IBM Proprinter emulation.

When you use a 24-pin printer to print graphics from most Commodore graphics programs, the printer uses 8-pin emulation. This is automatic; the printer knows to use 8-pin emulation because the escape codes it receives are the ones used for 8-pin printers. There are two kinds of 8-pin emulation, Epson LQ and IBM Proprinter. The following is a description of each, beginning with a short description of true 8-pin output.

8-Pin Output

The "common" 9-pin printer only uses eight pins for printing graphics, hence I will be referring to it as an 8-pin for this article. A Commodore hi-res screen is broken into rows, each row being eight pixels down (a row is the height of the blinking cursor you see when you turn the computer on). When printing graphics, each of the pixels cause a corresponding pin in the printhead to fire (or not). The pins on an 8-pin printer are 1/72" in diameter, in a vertical line; hence the height of a pass of the printhead to print a row is 8/72" (or 24/216"), which equals 9 rows per inch.

Epson LQ Emulation

This emulation uses all 24 pins in groups of three; three pins down are assigned to each pixel on the screen. The height of the printhead (all 24 pins) is 24/180" per pass of the printhead, or 7.4 rows per inch. This is 17% taller than the same pass of the prinhead on an 8-pin printer. The ESCape codes to set proper linefeed spacing so there is no interlinear slit are either ESC 51 24 for 24/180" or ESC 65 8 for 8/60". These are the same ESCape code values that would be sent to and 8-pin printer for proper graphics linefeed spacing, but they set the 24-pin printer for the required larger linefeed. Epson emulation gives you a vertical density of 60 dpi, which isn't even as good as an 8-pin printer. Epson emulation normally allows horizontal densities of 60, 80, 90, 120, and 240 dpi.

IBM Proprinter Emulation (AGM Off)

This emulation uses 20 pins in a 2-3 arrangement, one screen pixel assigned two pins, the next three pins, etc., for a total of 20 pins. This gives a vertical height for each pass of 20/180" or 9 rows per inch, which is the same as a standard 8-pin printer. The vertical density is 72 dpi, and programs that expect an 8-pin printer will give a proper height printout. The ESCape codes for setting graphic linefeed spacing are the same as for both an 8-pin and a 24-pin in Epson emulation, but they are interpreted as either 24/216" or 8/72". IBM Proprinter emulation offers horizontal densities of 60, 120, and 240 dpi.

AGM stands for Alternate Graphics Mode. IBM Proprinter emulation has two modes: AGM OFF, and AGM ON. AGM OFF gives you the IBM Proprinter emulation described above. AGM ON gives you the 60 dpi vertical density of Epson emulation, using all 24 pins. In either AGM mode you are limited to horizontal densities of 60, 120, and 240 dpi; if you want Epson LQ you're probably better off using it directly rather than using IBM Proprinter with AGM ON. It's interesting that Epson doesn't offer IBM emulation, although Epson's competitors do.

IBM Proprinter lacks the most important density: 80 dpi. There is a way around this; if your program can print triple width at 240 dpi then it can effectively emulate 80 dpi. With FGM you can select 240 dpi at triple width. Other programs

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may accomplish this more transparently (ie: they're getting 80 dpi by using 240 dpi triple width but you don't know it). Using this method gives you a denser (darker) printout, but it's also a bit slower.

There's one more important thing you need to know about IBM Proprinter emulation (AGM OFF). The ESCape code for setting linefeed spacing with ESC 65 8 doesn't directly set the linefeed spacing when AGM is off; you must afterwards issue an ESC 50 to make whatever you defined with ESC 65 8 active. Many programs don't know this. It is always better to use ESC 51 24 to set linefeed spacing; it becomes active immediately.

Graphics programs that send ESC 51 24 to set linefeed spacing should work fine in IBM Proprinter mode (AGM OFF). Some programs may send ESC 65 8 which will be ignored unless followed by ESC 50. Changing these programs isn't too difficult if you can use an ml monitor; search out the 27,65,8 codes and replace with 27,1,24. Locating the code on a disk is more time-consuming, but it can be done. BASIC programs are considerably easier to change.

Most 24-pin printers have an IBM Proprinter emulation mode, although it may be called AGM, Alternate Graphics Mode, or something equally clear. Some (most notably Epson) do not have this mode. This mode is usually set with a DIP switch, though some printers may allow calling it with escape codes. If you want the most compatibility with existing Commodore graphics programs then make sure the printer has IBM Proprinter emulation.

Ink Jet Printers are similar to 24-pin printers in their 8-pin emulation modes for graphics, but there are wide variations in quality. I tried an Epson Stylus-800 and, besides lacking AGM mode, it had the worst 8-pin (emulation) output I've ever seen. It went back! I'm presently using a Canon BJ-200e which I'm quite happy with. Its 8-pin emulation is EXCELLENT, and it has both Epson LQ and IBM Proprinter modes (including AGM OFF/ON). In its IBM emulation the printer uses forty of it's 64 nozzles, assigning five vertically per screen pixel instead of the 2-3 arrangement used in 24-pin printers. Since the dots are 1/360", this gives true 72 dpi vertical resolution. In Epson LQ emulation it uses 48 nozzles in groups of six for 60 dpi vertically.

What about using true 24-pin mode? In this mode every pixel on the screen would relate to one printer pin. This mode would give the very best resolution. It would also require massive amounts of memory; a full hi-res screen (8000 bytes) would print out about the size of a postage stamp. Multiply that out by the number of screens that would be needed to do a full page and you start to get the idea. I don't know of any Commodore programs that can accommodate that fully, although CMD's Perfect Print for geoWrite does perform something similar to what would be called 'scaling' of fonts to achieve maximum printer resolution with text (it also prints graphics at maximum resolution, but this requires 'best guess' interpolation which is not as accurate). CMD's hardware does make it a possibility for developers to create new software that could take better advantage of 24 pin printer resolution (no FGM rumors please—I am not working on such a thing).

I hope this has shed a brighter light on using 24-pin printers. If anyone else has information to share about using 24-pin printers with Commodore machines I'd like to hear it, as would *Commodore World*. If you have questions I'll try and answer them if you give me a call at FGM (503-496-2234—evenings are best).

- Ron C. Hackley

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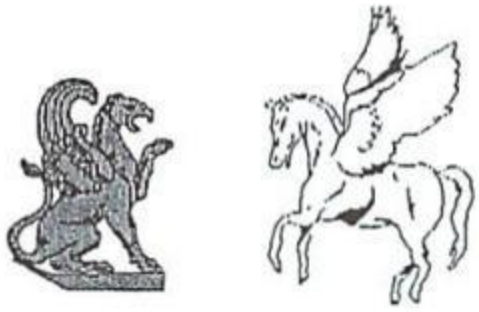

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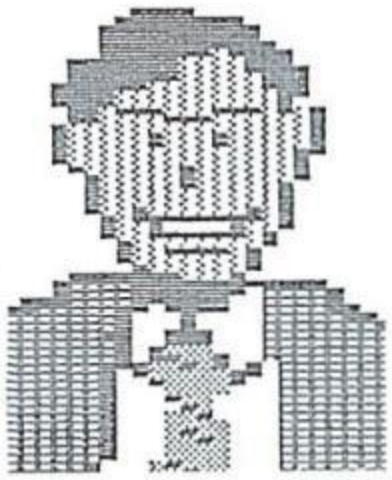

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Just For Starters

by Steve Vander Ark

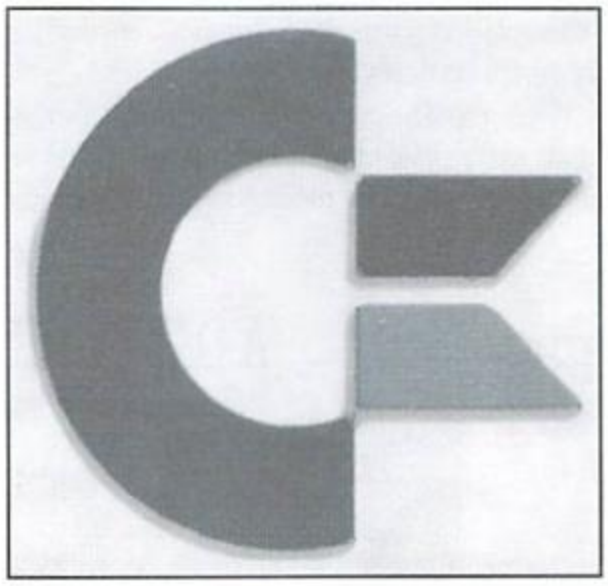
DISK DRIVE AND FILE NAME BASICS

This is the third installment of this column, and as promised I'm going to talk about disk drives. But before I do that, let me recap what we've talked about so far. If you haven't read the previous two columns, you might want to think about back issues. (The editor will love that little plug there. And as stated in the Ferengi's 33rd Rule of Acquisition: It never hurts to suck up to the boss.)

I started things out two issues ago with the comment that a computer talks all the time. In that column we discussed the fact that your Commodore computer needs to be able to send messages back and forth between its own processor and the various *peripherals* you attach to it, including the monitor (that's how the image gets on the screen), the keyboard (which is how the computer hears what you have to tell it), and the disk drives. We talked about how a computer needs to be able to talk to and listen to these various devices in order to do anything at all.

In the last issue we talked about a specific type of talking the computer does: error messages. These are the words that appear on the screen sometimes when something doesn't go quite right. I listed a short program that you could type in to read the error message on a disk drive, which is one of the most important devices you'll be hooking up to your computer.

And it was at that point that I promised to spend a little time this issue talking about the disk drive itself. It is, as I just mentioned, a very important piece of equipment. You can run your computer without it, that's true, and it's possible that some of you may be doing exactly that; even so, it's likely that you'll get one sometime soon.



Both the disk drive and the device it more or less replaced, the tape drive, are pieces of equipment designed to store information semi-permanently and provide that information to your computer when it asks for it. That may mean a list of instructions telling your computer how to, say, act like a word processor. Such a list of instructions is called a *program*, and it is a very important kind of information for a computer. Without a program to run, a computer would sit there like last year's fruit cake, worthlessly taking up space. There is another kind of information which these devices commonly store, what you might call documents or data. This is the information you create yourself when you work with a word processor or database or some other program.

Here's an example of how this works. Let's say you wanted to write a letter using your computer. You have it all hooked up (check out last issue for some hints along those lines) and have a disk that says that it has a word processor program on it. That means that the disk has recorded on it the series of instructions which tell the computer how to act like a word processor—things like reading the letters you type on the keyboard and placing them on the screen. If you have a tape drive, those same instructions will be recorded on the tape. So you put the disk into the disk drive or the tape into the tape drive and use the load command we talked about two issues ago. In order to tell the computer what information to get from the disk or tape, of course, you'll need to know what name that information was stored under.

Let's stop right there a minute and talk about that name business. Each individual collection of information, whether that be a set of instructions (a program) or a set of data, has to be identified somehow for the computer to be able to find it. In the case of the Commodore, each such collection of information, often referred to generically as a *file*, is allowed a *filename* of up to sixteen letters, numbers, or spaces. That's the filename you use in the load command, and you have to type it exactly for the computer to know which file you mean.

You can usually find the filename you need by checking the documentation that came with the disk or tape, but that isn't always possible. There is a way to check the names of all the files on a disk (but not for a tape). You can type in a command that tells the computer to find the *directory* of the disk. At the cursor you type LOAD "$",8 and press RETURN. That's a dollar sign in quotation marks. The disk drive will whir after which the ready message will come back. Then type LIST and RETURN to see a list of all the files

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on the disk. If the list is too long to fit and the screen scrolls past too fast, hold down the CONTROL key and it will slow down. You can stop the list at any time by pressing RUN/STOP. If you want to see the list again, type LIST again and press RETURN.

Getting back to our example, you type in a command for the computer to look for the program you want, identifying that program by name. The computer then asks the disk drive or tape drive to find that file and send it over to the computer. You'll see a message on the screen telling you that the computer is looking for the file, then (assuming the file is actually on that disk and that you typed the name correctly) you'll see another message telling you that the information you requested is being loaded into the computer. These are all example of the computer talking to you, just like we discussed in this column in the first issue. Once the program is loaded into the computer, all that's left for you to do is to tell the computer to start doing the instructions; the command for that is RUN, followed by a RETURN. It's possible that the program might even be written to start itself, which saves you that last step.

So far, then, we've loaded a program into the computer and told it to start running. That information is stored in a section of the computer called RAM, which stands for Random Access Memory. RAM is open storage space which a program will fill with instructions; it's also where the program puts data as you create it. Think about it for a minute. As you use that word processor, you're going to be creating data, a collection of information. You're going to be creating a specific string of letters, spaces, and punctuation marks that when put together in a row are the text of the letter you are writing. As long as you're working on the letter, the word processor will keep your data in an open area of RAM. When you're done, you might very well want to save that data so you can call for it again later. Unfortunately, you can't save that information in RAM because the minute you turn your computer off, RAM goes blank. It's kind of like showing a number on a basketball scoreboard by lighting up only certain bulbs in an array of bulbs. As long as the power is on, you can show a number up there and keep it visible. But the minute you cut the power to the display, the number disappears. That's what happens to anything stored in RAM when you shut down your computer.

Well, if you can't store the data inside the computer, where can you store it? The answer is, of course, on a disk or tape. You have to give a command (and the word processor will have a way for you to do this) for the computer to send your data back to the disk drive or the tape drive, where it will be stored away. It will very likely become a separate file on the disk or tape, so you'll probably be asked to give a filename for it. Once you've done this and left your program, you'll see your new file if you list the directory again.

Now what does this all have to do with disk drives? I did say way back at the top of the page that disk drives were our topic for this issue. From the example I just gave, it sounds like a tape drive would work just fine, all except for that directory thing. But that is exactly the point, and exactly why I said that a disk drive was the most important peripheral you'll have. You see, every program you run on your Commodore, with the exception of those few that are on cartridges, will need to come into your computer from somewhere, and since there are virtually no programs available on tape, you will have to have a disk drive. Once you start using a program, especially a productivity one like a word processor, you'll need someplace to store the data you create. A tape drive will work for this, but very slowly and not very reliably. Again, for all practical purposes, you will need a disk drive. In other words, for just about anything you are thinking of doing with a computer, a disk drive is essential. If you don't already have one, or if you are wondering if you should get a better one than you have, check out the sidebar for a brief description of the various types available. And tune in next issue for more in the continuing saga of You And Your Commodore!

Disk Drives for your Commodore 64 and 128

There are really two types of disk drives for the Commodore, the type that handle the larger 5-1/4 inch disks and those that take the smaller 3-1/2 inch disks.

Since almost all Commodore software comes only on the larger disks, a drive that handles the 5-1/4 inch disks is a must. As an add-on peripheral, one of the other type of drives can be very helpful. Since only the FD Series drives are still being manufactured, you may have to check the want ads or your local user group for a used drive.

Commodore 1541 or 1541-II
This is the basic Commodore drive. It handles 5-1/4 inch disks but will read or write to one side only. Since virtually all software for the Commodore comes on single-sided 5-1/4 inch disks, this drive is sure to work for you.

Commodore 1571
The next step up from the 1541, so to speak, this drive also takes the 5-1/4 inch disks. The big difference here is that the 1571 can read and write to both sides of a disk. It can be used with both single- and double-sided disks, which means that it can hold twice as much data.

Commodore 1581
This is the Commodore drive for 3-1/2 inch disks. Each disk holds a lot more information than the 1541 or 1571.

CMD FD Series Drives
These disk drives have recently been released by Creative Micro Designs. They take 3-1/2 inch disks, just like the 1581, but unlike the 1581 will read and write to the higher capacity disks, such as HD (High Density) and ED (Enhanced Density) disks.

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Foreign Exchange

By Joseph Gaudl

THE INSIDE SCOOP ON THE GOOSE THAT LAYS THE GEOS EGGS

Do you remember the times when a C-64 cost you as much as your monthly rent? Consider the plight of the C-64 users in the former Eastern Block countries; most of them used a C-64 only in their dreams before the collapse of communism. A few, very fortunate East Germans bought their Commodores on the black market, or had them smuggled into the country with friends or relatives from the West. You can't imagine what they had to pay for the privilege of owning a 'bread box.'

The days of waiting to receive and devour the contents of three month old magazines are forever gone. Former East Germans now enjoy most of the advantages of a free German market, and can easily buy any computer they wish. Thankfully, some have resisted the urge to blow their savings on sleek new MS-DOS machines; indeed, many have clung to their values, and have opted to stick with computers that have proven themselves as one of the all-time best values: the Commodore 64 and 128.

Leaping Leipzig

In the beautiful German city of Leipzig, a group of Commodore and GEOS users and experts meet every other month to share their programming expertise with each other, and with the entire GEOS community. They call themselves GUSS (pronounced goose), which is the acronym for Geos User Software Saxon. The name seems appropriate, as this group has laid some golden GEOS eggs that no GEOS user should have to do without.

GUSS' software is distributed throughout Europe and England by Denis Döhler who, along with Falk Rehwagen, does most of the club's programming. Both of these programmers speak English and have translated a fair amount of their

software for the English-speaking countries. The club offers a free catalog, shipped air mail to individuals and other groups requesting it. The programs offered by GUSS are *not* shareware; however, they aren't expensive to buy, either. Most of the disks they offer are chock full of handy utilities, applications and fonts, and sell for around $15.00 per disk. Let me give you a brief rundown on what the GUSS offers.

The Best Of... Volume One

Fast Kernal 128 - This Kernal patch enables your GEOS 2.0 to utilize the 1.3 MHz speed of the 128's keyboard.

Set Clock - A short program which allows you to set the time and date while waiting for GEOS to finish booting.

Show Photo - A small but effective Desk Accessory which can be activated from the geos menu to show the actual photo scrap.

Diskmonitor - An excellent disk monitor which works with all disk formats, including REU's.

Drive Info - A Desk Accessory which shows the information on all connected drives.

Boot Trans - An Autoexec program which transfers selected programs to an REU during the boot process.

Qselect - A small deskTop replacement which can be used to open, erase, rename and print files. Also operates on the 128 in 80 column mode.

LQ Font Collection One and Two

Thirty (fifteen per disk) new LQ and HQ fonts for the Perfect Print LQ system. Most of these were designed by Denis Döhler, and range from dingbats to borders to normal fonts. You must have CMD's Perfect Print (known as GEOS LQ in Germany) to make use of these fonts.

NLQ Font & Print

This disk gives you the ability to write and print documents using the language sets built into your printer (English, German, French, Spanish, etc.). There's a patch program included which expands the functions of the Epson WW (gc) NLQ driver. This also includes 15 national COMMODORE fonts in 10, 12 and 15 points.

GeoCOM

I've purposely saved this program by Falk Rehwagen for last. GeoCOM is a compiler system which compiles source text by using BASIC oriented commands and functions in geoWrite. This gem is being translated into English, and is very popular in Europe. The German magazine, 64'er, ran an extensive series of tutorials for GeoCOM this year. GEOS programmers around the world will want to get their hands on this one!

More To Come

GUSS is working their next 'The Best of...' disk, and have a number of other projects lined up. Write to them (and mention CW) care of:

Denis Döhler
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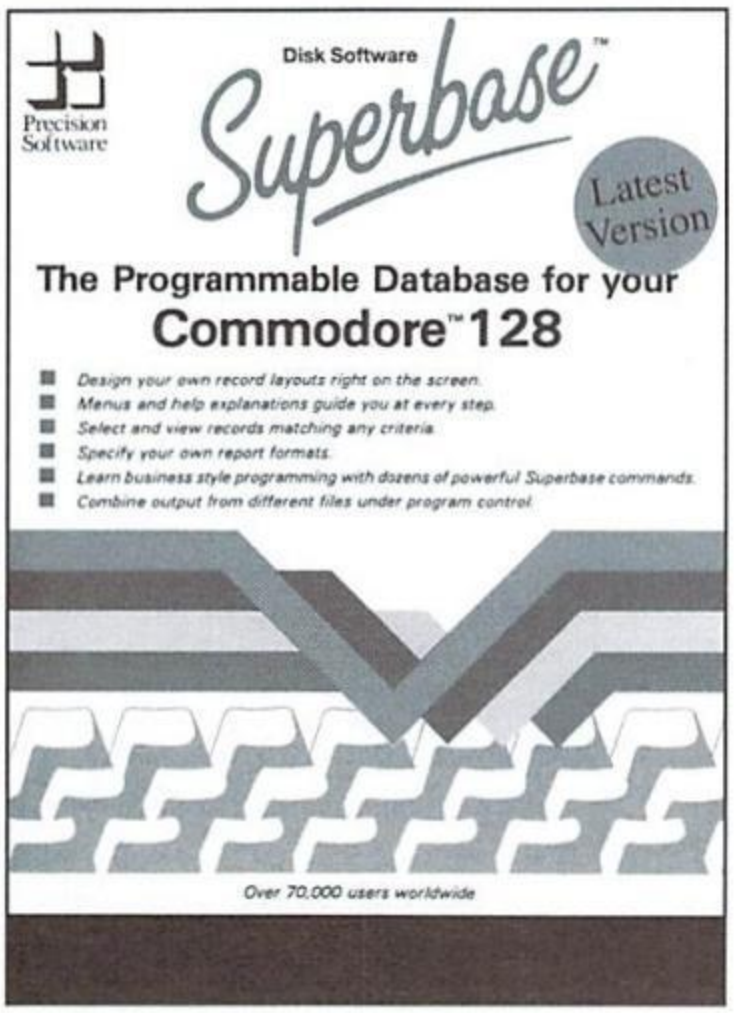
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LET THE GAMES CONTINUE

by Doug Cotton

Games have undoubtedly affected the shape of the Commodore 64 market more than any type of programs. Yet, in these twilight years of this phenomenally popular home computer, nearly every major game producer has moved on to other, more lucrative platforms. Even so, there remains a very real market for games—and luckily, there's still a wide variety of games still available from a number of sources.

The Early Years

When the Commodore 64 was young, games were generally produced by small companies and individual programmers who were, like us, just getting to know the exciting capabilities of the hot new home computer from Commodore. Many had previously worked with the VIC-20, and there were even some titles ported from this little brother of the 64. But this was truly a unique time in history when almost anyone with a little initiative and a lot of time on their hands could write and market a program.

A number of the early programs produced by small companies and individuals were on tape, just as was the case with the VIC-20; but this changed quickly in the U.S. as Commodore 1541 disk drive prices dropped to affordable levels. Cartridge games, too, were initially somewhat popular, but only the larger companies could afford to produce such games.

It quickly became apparent that gaming was the hottest new market in home entertainment, and small companies specializing in writing games for the popular computers of that era prospered and grew at an unbelievable rate. Companies who developed games for the big arcade machines of the time (who can forget Pacman, Zaxxon or Missile Command?) began porting their games to computers. All this growth created a cornucopia of games on the market, drawing more and more people into home computer ownership. And the home computer of choice, the one with the most bang for the buck, was the Commodore 64.

The Classics

This was an era that few of us who were involved with will forget, nor is easy to forget the games that just kept coming. Certainly Pacman, Defender, Frogger, Donkey Kong, Dig-Dug and Centipede belong on the list of classics that showed up on our monitors. But these were all 'ports'; games written for arcade machines, then rewritten to operate on the 64. Most of the best games, however, were games written specifically for the 64.

One of the most popular early games specifically written for the 64 was Jumpman. It was a well designed game, and combined crisp graphics, great sound, and responsive control. Not to mention the fact that the game itself was just plain fun, and had so many levels that it was nearly impossible to get bored with it.

The Zork series also comes to mind, though these games were ported to other machines. For those unfamiliar with Zork, it was a highly popular interactive text adventure game. Infocom, the maker of Zork, followed it up with a couple of sequels which eventually became known as the Zork Trilogy. They eventually released a wide range of interactive text adventures, including the notable Hitchhikers Guide to the Galaxy. If you've never played one of these kinds of games, you may not be familiar with what they are. Interactive text adventures are not unlike role-playing games. You assume the role of a main character, and are presented with situations which must be worked out in order to advance or complete the game. All of this is accomplished strictly through text—there's no fancy arcade graphic displays, no joystick control—just the keyboard and you. These games can be tough, and can really take some brain power to resolve. In the case of the Infocom games, there's an

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extensive set of commands that varies from one game to the next, each including some common commands as well as some which are specific to the particular game. Infocom's input parser—the routine used to decipher what you type—is part of the reason these games were so successful; it was intelligent enough to accept commands embedded in other text, such as being able to understand both "Drop the ball" and "Drop ball".

There are other games that I'd consider classics just due to their uniqueness; Space Taxi, for example, was probably one of the first to include speech, and was also a lot of fun. Repton, too, should be considered to be a classic—it was by far the best Defender-type game that I'm aware of.

The list goes on, obviously, and one could probably write a whole book about the classic games. Unfortunately, our space is limited, and we should move on to other topics.

Here Yesterday, Gone Today

While the 64 reigned supreme for years in the game market, its edge slowly slipped away as dedicated game machines with better graphics and speed became available. It's quite surprising just how long the 64 was able to hold its ground against new innovations, though. After all, game machines like the Atari 2600 offered the capabilities for playing games without having to learn how to use a computer—not that the 64 was all that difficult to operate for the purpose of just playing games. Yet, many people had a real phobia when it came to computers; a condition which still exists today to some extent. But it took Nintendo's game machine to really break the 64's lead in the home entertainment industry—long after the 64 was considered an obsolete product.

How did the 64 hold on for so long? One can only guess that it was a combination of things; inexpensive disk-based games versus the cartridges, the vast library of programs available for it, and the ability to use the computer for other purposes like word processing and such. All of these factors certainly played a role in placing more 64's in homes long after anyone in the industry could have imagined.

As 16-bit game machines and computers proliferated, the 64 game market dwindled. Game makers began phasing out Commodore games as sales declined. Many of these companies got out quickly, liquidating vast numbers of packages they had warehoused; others continued to offer current products to distributors, but put aside plans for future products. Competition in the game machine markets was getting heavy, and even the largest game companies couldn't afford to split their resources to support platforms that didn't pay back quickly on new developments.

Here Today, Gone Tomorrow

Naturally it's a great loss to those of us still using the 64 to have little new software being developed. After all, to anyone on the 'outside' such a market would appear to be dead. But at this point we need to take a little closer look at what we really do have available to us, and gauge the importance of new developments. Have you noticed that the hot new development for Nintendo's Gameboy—being touted on televisions across the nation—is Donkey Kong? Excuse me if I don't get too excited about that. In fact, if the games I normally see advertised on television for Super Nintendo and Sega Genesis are an indication of the normal fare for these machines, then our old 64 games are far cry from being obsolete.

I should also mention that I'm fully aware of a few upstarts that are reportedly getting some new games ready for the 64. At least one company in England is also working on porting some of the European games we've been missing here. And in this issue there's a review of a new game from Creative Pixels. So, while we're not being bombarded by a flurry of new games as we were in past years, there's still some chance of seeing a few new titles.

But even if we don't consider any of these new games, my opinion is that many of the older titles made for the 64 are still viable today. The biggest problem then is in obtaining many of the games that are still around, *while* they're still around. And the fact that you're reading this article in Commodore World means that you already have information about some of the sources right in your hands.

The amazing thing is just how much is still available. Remember those liquidations I mentioned a few paragraphs back? Well, all that software had to go somewhere.

Where to Look

There are relatively few companies left who still stock Commodore software, and in some ways this helps cut down your search time. Most have some kind of catalog; call them and get one—they're almost always free, and often contain items that you hadn't thought you were looking for but really do want. There is, after all, a vast number of games available from these sources.

Browsing through catalogs, I saw a lot of titles that would be great additions for anyone—many of them classics: Acrojet, Archon 2, Arctic Fox, Arkanoid, Barbarian, Bard's Tale, Batman, Beach Head, Beach Head 2, Beyond Zork, Blackjack Academy, Blue Max 2001, California Games, Chessmaster 2000, Die Hard, Dig-Dug, F-15 Strike Eagle, F-19 Stealth Fighter, Family Fued, Flight Simulator 2, Ghostbusters, Hacker, Hardball, Jeopardy, Jet, Jumpman Jr., Karateka, Last Ninja, Last Ninja 2, Leaderboard Golf, One on One Basketball, Pacman, Paperboy, Pitfall, Predator, Predator 2, PSI 5 Trading Company, Qix, Racing Destruction Set, Raid Over Moscow, Rambo 3, Red Storm Rising, Repton, Robocop, Sargon 3 Chess, Seven Cities of Gold, Silent Service, Skate or Die, Skyfox, Skyfox 2, Spy vs. Spy, Stationfall, Summer Games 2, Superman, Tenth Frame, Test Drive, Test Drive 2, The Amazing Spiderman, Wheel of Fortune, Where in Time is Carmen San Diego, World Games, Zork Trilogy.

I also saw some really great prices on this stuff, some selling as low as $3.00 each! If you're into games, I very much recommend getting a catalog from Software Support International. I don't believe I've ever seen a larger selection of Commodore programs in a single catalog, and their prices are great. Check into their 'superbundles' while you're at it; these include several titles from a given manufacturer, all packaged together at a bargain price. In most cases you'll get five or six games for about $10—about a third of the original price of one game.

Bearing in mind that the titles I mentioned are only a small sampling of what is available in catalogs, you should start to get the picture—there's still a lot of great games left around.

Used Software

If you're looking for a specific title, and can't locate it in any of the catalogs, chances are new copies are no longer available. Some of the most sought-after titles, like Impossible Mission and Raid On Bungling Bay naturally sold out long ago. To locate such titles, you'll have to use all the resources at your disposal to search the used market. Try calling a few of the companies such as Software Support (SSI), Software Hut, Harvey and Associates, Commodore Country, Computer Bargain Store, and any others you can dig up phone numbers for. Most of these handle used software, and have a constantly changing inventory. Some may even put you on 'call' list if they don't currently have what you want.

There are other routes for finding used software, too. Yard sales, thrift shops, your local newspaper—all are good resources to check. Classified ads won't list individual titles, but often you'll see someone selling a 64 or 128 system with software, and many times they're willing to part with some programs separately.

And don't forget to check with your local user group, BBS's, and national networks like GEnie, Delphi, and Compuserve. If you use your resources well, it's only a matter of time before you find what you're looking for!

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PUBLIC DOMAIN GAMES

by Tim Walsh

Once upon a time, the C-64 enjoyed more game development than any other platform—more than Apples, PCs, TRS-80s—any of them. Software companies routinely duplicated and peddled their jovial Commodore 8-bit game titles by the tens of thousands, and you could find them stocked in abundance at many of the major computer store chains and book stores.

Well, it's over a decade later, and there's no profit margin left to entice software companies to invest in 8-bit game development, no matter how cost efficient it is in comparison to the modern-day process. You can now count on the fingers of one hand how many software companies still carry Commodore game software, and maybe on one thumb the number that are left actively developing for the C-64. Ask for Commodore game at a bookstore and they'll probably ask if that's a new game for the Mac or the PC.

The Evolution of Computer Games

Let's pause and reflect on how game development has evolved, and how you, a Commodore owner, can adapt to these changes. First, thanks to the advent of "game machines", the computer game industry has endured several radical and rapid upheavals.

The new procedure bears little or no semblance to the practice when writing Commodore 8-bit games was in vogue. Writing 8-bit code and documentation now seems downright effortless compared to the labor required to create today's elaborate, role-playing, multi-platform games that reside on two CD-ROMs with over a gigabyte of executable code and enough documentation to dwarf the Magna Charta. It's mildly amusing to think of a 30K game for the 8-bitters were once considered "large" programs.

Secondly, while game development in the 8-bit side of things has clearly waned, the interest level in hasn't suffered a similar fate. Many folks just like yourself continually search for games, with no idea of what to look for or even where to begin looking. Fortunately, a lot of potentially "free" (or at least very reasonably priced) software is readily available in the public domain.

Shopping for PD games is quite a bit dissimilar to the commercial market—games aren't sold with a booklet of documentation, there's no packaging, and their overall quality is typically less refined. On the plus side, there's the occasional appearance of a new game, or the resurgence of a golden oldie. The "game developers" in this arena usually aren't college-educated programmers earning six-figure salaries—they're usually college-bound kids holed up in their bedrooms, practicing the almost-lost art of writing and compiling code by the light of their Commodore 1702 composite monitors.

Finding the games these 8-bit programmers produce is easy—provided that you've got a modem and a on-line account. We're not referring to the type of on-line account you'd get by joining a local BBS, either. To be truly effective in the game of snooping out PD games, you need access to one of the heavy-hitters—preferably GEnie, CompuServe, or BIX. Not to be confused with the much ballyhooed information superhighway, these independent networks offer well-maintained Commodore 8-bit file and message areas packed with freely distributable games that are still actively downloaded.

Without an account on any of these networks, you simply can't determine which is best from a games standpoint. To that end, I'll list some pointers. From a sheer file volume aspect, GEnie's game count can't be beat. Dating back over nine years, the Commodore 64/128 Roundtable areas are brimming with all manner of games. Mastering the downloading process is a cinch, with helpful sysops and long-time users eager to jump in and help. Their help is invaluable, since many of these archived files don't employ point-and-click decompression techniques.

For fewer, but more unique, one-off games, CompuServe is my network service of choice. The Commodore areas on CompuServe aren't as lively as those on GEnie, but that's not overly important in the grand scheme of things.

Finally, there's BIX—operated by Delphi. Originally conceived as an on-line offshoot of BYTE magazine, this remarkable technically-oriented network was acquired by Internet-champ Delphi and has evolved into a BBS of near cult status. One unique feature of BIX is its stock of Commodore files, of which a small percentage consists of PD games.

Naturally, I don't recommend joining any of these networks solely for the purpose of finding games to play on your Commodore—the myriad of other services they provide makes them well worth a little additional exploration. No matter where your interests lie, you won't be disappointed with what you find.

Personal Notes

While PD games for elite PCs, Macs and Amigas are no match for their freely distributable counterparts, Commodore 8-bit games are comparable in their quality to many of the commercial offerings. Unlike the open-ended architecture on the 16- and 32-bit computers, finding games that push the envelope of the C-64's capabilities is common. Although limited to 16 colors, some PD games for the Commodore 8-bits are examples of truly inventive programming.

I prefer to judge games by the level of entertainment that they provide. So as not to taint their usefulness, I didn't include educational PD games, which I'll cover separately in a later article.

To that end, I've only included the high-action arcade and adventure games in my roundup. To be fair, the criteria used in the selection process was download count, originality, and playability. I've compiled a list of top 20 all-time best on my personal list, and noted their network locations whenever possible. As noted, in some cases you'll find them on multiple networks.

Tim's Top-20 PD Game Picks

Landmines: CompuServe (MINES). Played from the keyboard, this 4K BASIC game written by Jim Butterfield comes complete with sound effects and is a lot of fun to play. It's simple, slick, and well-executed, with a goal of trying to move from the board's upper-left to lower-right without hitting a mine.

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Terminator 2: CompuServe (TERMIN.BIN). Terminator 2 is another resident of CompuServe's Commodore Library 8 and appears as self-dissolving archive. In this role-playing game, you are a Terminator and John Connor has reprogrammed you to get to work clearing cities and kicking some butt for the Resistance. You move across the playing field destroying exo-skeletons and other bad dudes, with a watchful eye out for of booby-traps.

Krackout: GEnie file #7507 (KRACKOUT-PRO). BIX file "krakout.2". Some controversy surrounded this 46K game six or more years ago. Messages were in abundance claiming it to be a commercial game, and required immediate removal from all BBSs. Apparently, GEnie didn't listen, since it's still there for the taking. My personal experiences with it left me with the impression it's still arguably the most level-laden Brickout-type game ever written for any platform.

Tetris 128: GEnie file #9023 (TETRIS80.SDA). CompuServe (TETRIS.BIN). An 80-column version of Tetris 128 by Chris Batchelor, Tetris 128 is shareware, but well worth the suggested five-buck donation. The program features variable well width, variable line drop, starting levels, variable speeds, proportionate rotation, and no-drop acceleration. There's no accompanying music, however. If you're looking for a good Tetris-type game for the C-64, GEnie file number 7283 (ROTATIONS.SDA) is a good choice.

Guardians of Mercury: CompuServe (GARDNS.BIN). You'll find this 59K 8-bit programming extravaganza by Steve Scotland a space mission of the first order, at least as 8-bit offerings go. It was created with Shoot'Em Up Construction Kit and contains 4 files: "MISSION" (docs), "GUARDIANS" (auto-booter), "GUARDIANS (executable) and "EVIL", an ad for another game by the author.

Traffic 64: CompuServe (TRAFFI.BIN). Found nowhere else but on CompuServe, this 36K almost-commercial quality archive lets you use a joystick to control the traffic lights of London. A unique concept, to be sure.

Megatank: GEnie file #9463 (MEGATANK.SFX). CompuServe (MEGATA.BIN). Megatank is a 38K self-dissolving archive file for the C64. Your mission, should you choose to accept it, is to blow up enemy tanks. Smooth-scrolling graphics and good sound effects complete the action-packed scene.

Smurfen: GEnie file #12578 (SMURFING). CompuServe (SMURFN.BIN). SMURFEN by C.A.W. and M. Brand lets you, a lowly Smurf, use a joystick in port 2 to run, jump and duck. Cool.

Quest For Power: GEnie file #2900 (QUEST FOR POWER). Quest For Power is a another golden oldie "Dungeons and Dragons"-like adventure game for the C-64. Kids of all ages never tire of any program that lets you create a character, explore multiple levels, and ward off monsters. There's the ever-present magical spells, gold, pits, chutes, and transporters. My kind of sport.

Explore: CompuServe (EXPLOR.BIN). Jim Butterfield's Explore resides only on CompuServe and is an adventure game written entirely in Basic to originally fit in an 8K Commodore PET. While hardly a match for the sophistication of Krackout, Explore is a lot of fun and the author claims it's written for about sixth grade level. One, maybe two objectives: don't die and get as much cash as you can.

Airport 128: Genie file #4251 (AIRPORT-128.LBR). Make like a cigar-chomping, over-caffinated, non-unionized air traffic controller with your C-128. You're up in the tower at the world's worst airport with sweat on your brow and the responsibility of overseeing the take-offs and landings of 20 planes on time and safely. Four levels, emergency landings, and bad weather keep things, shall we say, interesting.

Xeropus!: GEnie file #1351 (XEROPUS). CompuServe: XEROP.BIN. Xeropus! is a Galaxian-type game for C-64. Nothing too complex here: Just plug a joystick into port #2, load 'Xeropus' and blast away. On the downside, the screen scroll jumps occasionally, usually right in the heat of battle. What's a minor technicality when you're having this much fun?

Starfighter: GEnie file #7706 (STARFIGHTER 128). CompuServe (STARFI.BIN). If you're a C-128 80-column high-action game aficionado, Jerry Whitfield's Starfighter lets you vent with just the right amount of good-time spaceship-blasting. The 21K archive dissolves into a 111-block file on your disk. Hot tip: At the main menu select 'Galaxy Data' for hints on how to play, and more importantly, how to survive.

Blackjack 128: GEnie file #4729 (USARTS BLACKJACK). Warmup for your next trip to Vegas with this 80-column blackjack game. Sound effects included.

Bugs: BIX ("bugs"). BIX's Commodore 8-bit file area plays host to this C-64 arcade game from 1989. As its name implies, your goal is to destroy bugs with a joystick in Port 2.

Wheel of Fortune: GEnie file #7514 (WHEEL/FORTUN.ARC). CompuServe (WHEEL OF FORTUNE.SDA) Appearing in a variety of assorted flavors, this version of "Wheel" let you bring this TV show-replica onto your C-128's 40-column Mode. One to three players win cash and the archive includes about 30 puzzles. There's even a "PUZZLEMAKING" utility included. C-64 users will want to get the most recent version for their computers: GEnie file #3765 (WHEEL OF FORTUNE2.SDA).

Planetoids: GEnie file #3302 (PLANETOIDS). Mark L. Fletcher's whiz-bang golden-oldie is still fresh, even today. Best described as a steroids-style, 8-directional thrust, multiple-stage, asteroid destruction program (say that five times fast), it's familiar to many long-time users. Sound effects and action true to the arcade game, you attack UFOs that home in on your ship.

Damsels: GEnie file #1200 (DAMSELS). Here it is, sports fans—the oldest game in this roundup, and also the most heavily-downloaded C-64 game in GEnie's vast Commodore 8-bit libraries. DAMSELS is a 28K archive where—yep, you guessed it—you save a damsel in distress. Buried deep in the program are clues. Buried not-so-deep in the description are the keywords: go, get, read, listen, look, feel, examine, unlock, start, kill, and climb. Good luck, and good hunting.

Pegasis: Genie file #7232 (PEGASIS.SDA). CompuServe PEGASI.BIN. Under either file, Pegasis is still the 13K jousting game known as Pegasis 64. With a joystick in hand, either one or two players can get calloused digits quickly with this fast-paced game.

Whirlybird: BIX ("whirlybird"). If you're ever had a hankering to shoot down helicopters, but didn't like the prospects of facing jail time and becoming just another number on Death Row, here's just what the doctor ordered. Great fun, kids.

On-Line Service Information

For more information on the service providers mentioned in this article, contact their representatives at:

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GEnie: 800-638-9636

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COMMODORE TRIVIA

by Jim Brain

Years ago, while the newsletter editor of a user group, I decided to fill some empty newsletter space with Commodore Trivia, to test the group's knowledge. After doing it for a few issues, I was soon promoted and time got away from me. However, in 1993, I decided to renew and expand the trivia into an ongoing effort. These resulting questions come from myself and users just like you, all of varying skills. I have attempted to research each question prior to submission, but I do make mistakes. My hope is that everyone, including myself, learns from the exchange of information that the trivia creates. I have found out numerous facts about the computers and operations of Commodore though these trivia questions, and I hope you do as well.

The following Trivia Questions are my gift to the Commodore Community at large. While other parts of this magazine may not be reproduced without the consent of Creative Micro Designs, Inc., I have decided to make the trivia questions public domain. This seems best, as I feel this is something that even I can do to give back to the Commodore community. Also, the questions are not all my own. I ask only that the article remains intact and unchanged, and that my information appears somewhere so users can contact me. These questions form a contest that I run on the Internet, so you may feel free to contact me for all the relevant information. If you do use them, I always welcome a postcard detailing where they were used. If you have a question, please send it (with answer) as well.

- Enjoy!

Jim Brain
Brain Innovations, Inc.
2306B Hartland Road
Hartland, MI 48353
brain@mail.msen.com (Internet email address)

COMMODORE TRIVIA #2 QUESTIONS

$00A What was the Code-Name of the Amiga while in development?

$00B What is Lord British's Real Name (the creator of the Ultima Series)?

$00C What is the POKE location and value that will fry an early model PET?

$00D On the Plus/4 and C-16, the VIC chip was replaced with the TED chip. What does TED stand for?

$00E Commodore produced a daisy-wheel letter quality printer in North America (maybe elsewhere) for the Commodore serial bus. Name it.

$00F What is the version of DOS in the 1541?

$010 What is the version of BASIC in the Plus/4 and the C-16?

$011 What are the nicknames of the original three custom Amiga chips?

$012 Commodore produced a 64 in a PET case. What is its name and model number?

$013 Commodore sold a 1 megabyte floppy disk drive in a 1541 case. Give the model number.

$014 What does GCR stand for?

$015 Commodore produced a drive to accompany the Plus/4 introduction that was designed specifically for the Plus/4. Give the model number.

$016 What does SID stand for?

$017 What does the acronym KERNAL stand for?

$018 What version of DOS does the 1571 have?

$019 What other two Commdore Disk Drives share the same DOS version number as the 1571?

$01A How many files will the 1571 hold?

$01B How many files will the 1541 hold?

$01C What did Commodore make right before entering the computer market?

$01D Commodore introduced an ill-fated 4 color plotter. Give the model number.

$01E Some formats of CP/M write disks using the MFM format. What does MFM stand for?

$01F On the Commdore 128, the user manual left three commands undocumented. One works, and the other gives a not-implemented error. Name the commands and what each one does or does not do.

Answers to these questions will appear in the next issue of Commodore World

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For years, Commodore set the standard with the 1351 Mouse. Sure, it was vastly superior to using the old digital input devices like the 1350 mouse, joysticks or imitation trackballs. But everything can be improved. Guaranteed 100% 1351-compatible, SmartMouse and SmartTrack do everything the C-1351 does and more! These highly intelligent, three-button input devices include a built-in battery-backed Real-Time Clock, along with double-click and Turbo features for GEOS. Plus, they come with a complete set of utilities for using the clock in GEOS and BASIC applications. Modern ergonomic designs make these devices smooth operators that are a pleasure to use. So, if you're tired of the slow, erratic movement of your current input device, make the intelligent choice and pick up a SmartMouse or SmartTrack today!

SmartMouse and SmartTrack... the Best C-64/128 Input Devices Ever!

- Three buttons means convenience! If you're a GEOS user, the left button is configured as single click, the right as a handy double click and the center button is the TURBO button. When depressed, it doubles the speed at which the pointer moves across the screen. Additionally, programmers can assign their own functions to all three of the buttons.
- Unlike other third party mice or trackballs, the CMD SmartMouse and SmartTrack trackball use the same custom gate array chip as the Commodore C-1351 mouse. This guarantees 100% compatibility.
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HARD TIPS

BUILD YOUR OWN AUDIO DIGITIZER FOR USE WITH DIGIMASTER

By Mark Fellows and Chris Brenner

The Digimaster software package (reviewed elsewhere in this issue of *Commodore World*) can edit and play 8-bit digitized sounds on a Commodore 64 or 128. Digimaster comes with a library of sounds, and can also convert Amiga IFF sound samples so that they can be used on your Commodore. However, if you want to sample your own sounds, a hardware digitizer (audio sampler) must be employed. Although Digimaster will accept input from a standard Amiga sampler, these devices are getting hard to find and a special cable is also required to attach the sampler to the C-64. As a result, we felt that it would be helpful to present these plans for a do-it-yourself, simple, low-cost quality sampler.

Important

This project requires some dexterity and knowledge of proper soldering techniques. An error made in the assembly of the audio sampler can cause damage to your computer and/or the sampler. In no event will Commodore World or Creative Micro Designs be liable for any direct, indirect, or consequential damages resulting from the use or misuse of the audio sampler or any of the information given in this article.

Parts

Most of parts required for this project are readily available from electronics supply stores, including Radio Shack. If you cannot obtain the parts locally, they can all be ordered from Digi-Key Corporation in Thief River Falls, Minnesota. We've included the Digi-Key part number in the parts list below to aid you in ordering the correct components. The full address and phone number for Digi-Key and other well-known mail-order parts outlets are given in the "SOURCES" sidebar.

AUDIO DIGITIZER PARTS LIST

Qty	Description	Schematic Key	Digi-Key Part Number	Approx. Cost/Qty
1	ADC0804 A to D conv.	U1	ADC0804LCN-ND	$ 5.00/1
1	LM358 Op-Amp	U2	LM358-ND	.84/1
3	1kΩ 1/4W Res. 5%	R1, R2, R3	1.0KQ	.26/5
1	39kΩ 1/4W Res. 5%	R4	39KQ	.26/5
1	33kΩ 1/4W Res. 5%	R5	33KQ	.26/5
2	24kΩ 1/4W Res. 5%	R6, R7	24KQ	.26/5
1	4.3kΩ 1/4W Res. 5%	R8	4.3KQ	.26/5
1	910Ω 1/4W Res. 5%	R9	910Q	.26/5
1	820Ω 1/4W Res. 5%	R10	820Q	.26/5
1	68Ω 1/4W Res. 5%	R11	68Q	.26/5
1	100KΩ Potentiometer	VR1	3386P-104-ND	1.07/1
2	10uF Tantilum Cap, 16V	C1, C2	P2038	.62/1
2	.001uF Poly Cap, 50V	C3, C4	P3102-ND	.48/1
1	47pf Ceramic Cap, 100V 5%	C5	P4845-ND	.18/1
1	12/24 User Port Conn.	P1	EDC305240-ND	2.14/1
1	Phono jack	P2	SC1133-ND	1.23/1
1	Perfboard, 0.1"x 0.1"grid, w/pads, min. size 2"x2.5" (Radio Shack 276-1395)			2.19/1
Approx. total cost:				**$16.93**

Required Tools

You'll need the tools and supplies given in the following list to begin this project. All should be commonly avilable from local hobbyist stores.

- 15 Watt soldering iron
- Rosin-core electrical solder
- Bus wire
- Wire-wrap wire and strippers
- Cutting pliers
- Needle-nose pliers
- 1/4" drill (to make a hole in the perfboard for the phono jack)

Assembly

The first thing to do is to find a clean, uncluttered, static-free work area. Once you have set up your tools and organized the parts, you are ready to begin. The first step is to solder the edgeboard connector (P1) directly to the perfboard. If this is not possible because of the type of perfboard you are using, you will have to use wires to make the necessary connections between the edgeboard connector and perfboard.

Next, use the bus wire and form a robust ground plane around the perimeter of the board,

Sources

Digi-Key Corporation
P.O. Box 677
Thief River Falls, MN 56701-0677
1-800-344-4539

JDR Microdevices
1850 South 10th St.
San Jose, CA 95112-4108
1-800-538-5000

Mouser Electronics
12 Emery Ave
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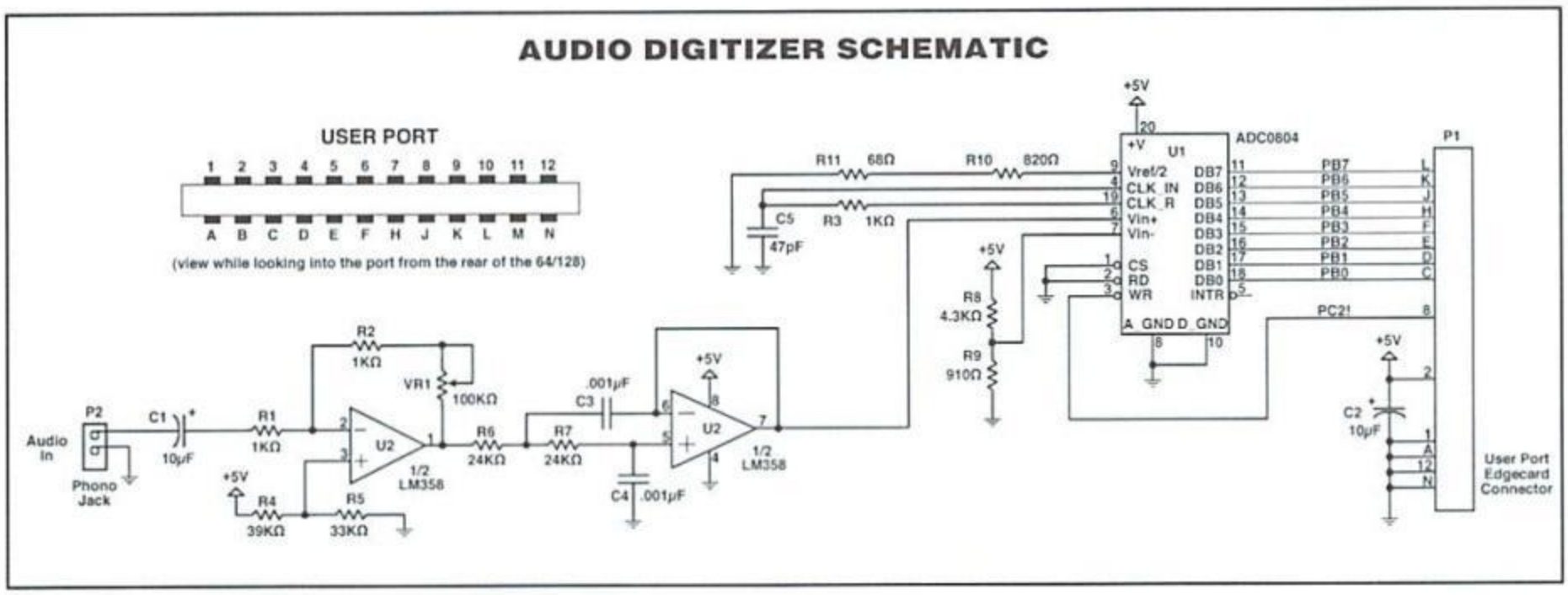


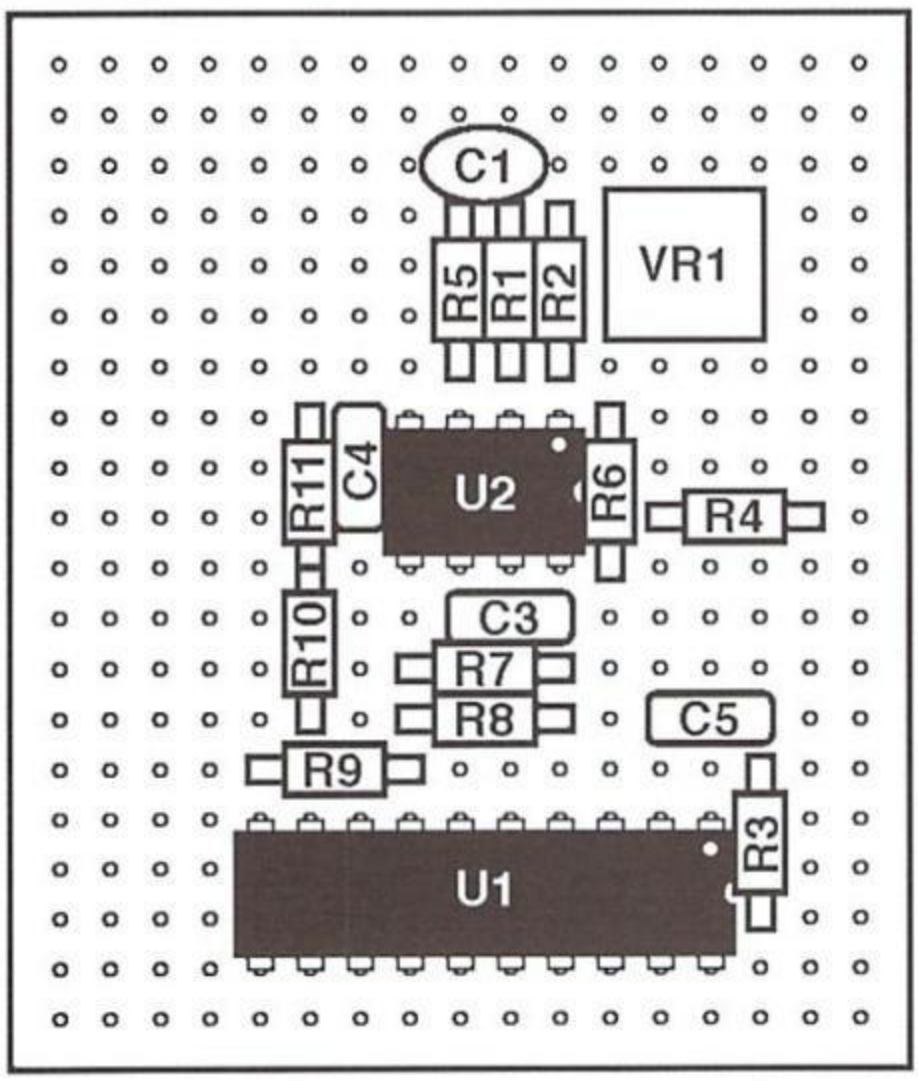
connecting it to Pins 1, A, 12, and N of the edgeboard connector. A solid ground plane is a must to ensure the proper, noise-free operation of this or any other electronic circuit.

Without soldering anything in place yet, arrange the remaining components on the perfboard so that the distance between connections and components is kept to a minimum (see layout diagram). This will help reduce noise in the audio circuit and result in cleaner-sounding samples later on. Once all the components are where they belong, solder them in place, and then make the necessary connections by using the wire-wrap wire. Follow the schematic carefully, and check your work carefully.

You'll notice that we left P2 (the Phono Jack) off of our layout diagram. It should be located close to C1, but your specific wiring connections may dictate exactly where it will go. You might also opt to use a phono cable instead of an actual jack, or mount then entire project in a small case.

Using the Sampler

Plug the sampler into the User Port, connect your audio source to the sampler's input (Phono Jack P2), and turn your computer on. If your computer does not power up normally, or acts strangely, shut it off immediately, remove the sampler and check your connections against the schematic. If your computer behaves normally, boot the Digimaster editor and try sampling a sound. Follow the instructions in the Digimaster manual and adjust your audio source and potentiometer VR1 on the sampler for the best sound quality before you begin sampling. If you have problems getting any sound through the sampler, or if the sound quality is poor, you may need to shut down and double check the audio source and your connections on the sampler. If all goes well on the other hand, you can begin the enjoyment of capturing your own high-quality, 8-bit digital audio samples on your Commodore.



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SOFTWARE IN REVIEW

Digimaster

An all-new program for processing digital sound samples on your Commodore 64 or 128 in 64 mode, Digimaster uses new techniques to reproduce eight-bit digital sound samples, previously considered impossible on a 64/128 without additional hardware. Eight-bit digitized audio is sixteen times more accurate that four-bit, and produces sound with less noise and distortion.

The package includes an editor, a utility to convert Amiga IFF sound files into a Digimaster-compatible format, relocatable machine-language player modules for both 64 and 128 modes, and sample BASIC programs to demonstrate how to use digitized sounds in your own programs.

The Digimaster Editor is mouse or joystick driven, and uses an intuitive graphical point-and-click user interface with pull-down menus, dialog boxes, and requesters. This makes the operation of the program a breeze, especially while editing the sound files.

After the program loads, the screen displays a menu bar across the top of the screen, and a "scope" window. The scope window contains buttons for playing all or a portion of the current sound file. A digitized sound file is loaded into the program by selecting "Load" from the File menu, then choosing the desired file from the directory list. While the file requester will display all files on the disk, only the "dff" sound files can be loaded. After the sound file loads, the program will display the entire sampled waveform in the scope window. A section of the waveform display can be highlighted (or "marked") for use with the various editing and sound effect tools.

The Edit menu contains six selections, five of which are used to manipulate portions of the sample. The sixth selection allows you to choose your default and "clip" file disk drive, and select a low pass filter cutoff frequency. The filter control allows you to adjust the "tone" to remove aliasing or quantization noise during playback. Aliasing noise occurs when frequencies above half the sampling rate are present in the digitized sound. Quantization noise occurs when portions of the sound are very soft.

The editing functions generally require that you highlight a portion (or all) of the waveform. This is done by moving the pointer across the waveform while holding the mouse or fire button down. Four buttons on the scope window allow you to fine-tune the beginning and end of your highlighted range. This range can then be copied or cut to the clip file, erased, or mixed with a previously saved clip. It's also possible to insert a previously saved clip into the current waveform data. The editing functions can be used to trim silence or noise from the beginning or end of the sound sample, or even jumble the words of a sentence around. It's also possible to create new sound samples from pieces of other samples.

The Sound/EFX menu contains six selections. *Volume* changes the volume of a highlighted range. This lets you create fade-in and fade-out effects, or increase or decrease the overall volume of the entire sample. It's also possible to use this function to change the volume of a portion of the sample, which may be necessary when overlaying or combining clips.

Resample alters the sampling rate of the entire sound sample; this can be used to decrease the size of a sound file, and is also useful when combining clips of samples that were recorded at different sampling rates.

Backwards will flip the marked range of data so that it will play backwards. While this feature has little practical use, it can be used to create interesting sound effects.

Loop Range will simply play the highlighted range in a continuous loop.

Sample Audio lets you record live sound directly into the computer with the help of an audio digitizer. The manual provides some information on obtaining and attaching such devices. [*Also note the hardware digitizer plans elsewhere in this issue -Ed.*] Digimaster has three sampling rates, labeled Slow, Medium and Fast, which translate to 8K, 10K, and 12K respectively.

All in all, the sound quality of Digimaster competes well with some of the sound boards designed for newer computers, especially at the medium and fast sample rates. I found the program's user interface intuitive and easy to use, and best of all, I had it up and running very quickly.

One of the best features of Digimaster is the ease with which you can use the sound samples in *your own* BASIC or ML programs. This raises the status of this package from a quickly-forgotten novelty item to a truly useful programmer's tool. Even the novice 64 or 128 programmer should be able to incorporate eight-bit digital sound into his or her own programs with the supplied routines.

I really don't have any negative comments about Digimaster, although I'd like to see a few more on-board sound effects functions such as echo, chorusing, and flanging. While these effects can be accomplished manually using the copy and paste editing functions, it's difficult and time consuming getting exactly the correct delay time, volume, and number of repeats. Producing a simple echo effect on a short sample required repeatedly reducing the volume of the sample, cutting the entire sample to a clip file, loading the original sample, then overlaying the clip at the right point. Hopefully, the author will include such functions in a future version.

Another nice addition would be the ability to have multiple clip files to ease constructing sounds from a number of different samples. These minor shortcomings aside, Digimaster is sure to please and amaze anyone interested in editing digital sounds.

- John Serafino

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A Day in the Life of a Prehistoric Man

A Day in the Life of a Prehistoric Man, by J.C. Hilty Productions; $19.95; Creative Pixels Ltd., P.O. Box 592, Library PA 15129.

A Day in the Life of a Prehistoric Man is a brand new game for the Commodore 64, and game players are sure to welcome it with open disk drives and eager joysticks.

Cave Man Mania

A Day in the Life is presented as a "Public Network Television Documentary" complete with wise-cracking (but lovable) host Salisbury Smythe. Smythe narrates the documentary as you guide a prehistoric cave man through all six of his daily events: Bone Collecting, Dinogoober Hunt, Save Your Mate From the CaveApe, Escape from the Pteranodons, Diamonds in the Rough, and a Mammoth Traffic Jam. A few of these events will bring back fond memories of games gone by.

Your goal is to obtain the highest possible overall score after playing consecutively through each of the six primeval events. Both your game score and the high score are saved to disk after completion of each event. *A Day in the Life* gives you the option of clearing the high score file at the start of the game.

A practice disk is included which allows you to play just your favorite events or to concentrate on the more difficult scenarios without having to play through the entire game.

Bone Collecting

Your first mission as a prehistoric cave man is to collect as many bones as you can while dodging ravenous dinogophers. If you're a resourceful cave man and collect ten bones, a pteranodon will join the clan of dinogophers pursuing you.

The Bone Collecting segment brought back memories of Pac-Man. While the maze looks easy enough to traverse, you'll soon discover looks can be quite deceiving.

A timer adds some difficulty to the task of bone collecting. You'll be one dead cave man if the timer reaches zero before you manage to collect any bones.

The toughest part of this event was mastering the joystick. A slight touch in any direction will move you quite a distance. Master this and you're on your way to building the bone castle of your dreams!

Dinogoober Hunt

Ever wonder what inspired Jack to climb that beanstalk? To hunt down dinogoobers, of course!

On your daily excursion to the top of the local beanstalk, you find yourself amidst a flock of flying dinogoobers. Dinogoobers were a delicacy in prehistoric times. There's nothing like barbecued dinogoober!

You're equipped with eight stones to hurl at the flying dinogoobers. You may position yourself up and down on the beanstalk to find a convenient spot for throwing your stones at the dinogoobers. This event will put your distance judging skills to the test.

Save Your Mate

In prehistoric times it was a daily occurrence for your mate to be kidnapped by a CaveApe. To rescue her, you must gather three sticks of dynamite to use against the ape. Of course, it's not as easy as all that. The dynamite is located in the CaveApe's cave, and the CaveApe will hurl boulders at you while you try to gather the dynamite. Since you're carrying dynamite, you must use extreme caution not to bump into any of the walls of the cave. One bump, and you'll lose a life. As you gather more dynamite the boulders increase in speed.

If you loved the Donkey Kong game, you'll love this scenario. This is one of the less challenging events in the game which provides you with the chance to rack up some points to help you beat the existing high score.

Do you have to rescue your mate? The answer is *YES*. Remember, she's the one that does all of the cooking and cleaning!

Escaping the Pteranodons

Now that you've collected your bones, hunted down dinner, and rescued your mate, it's time to meet up with the Pteranodons once again. This time they're chasing you through a forest fire, and eyeing you for their barbecue feast!

You travel through the forest by moving the joystick left, right, or down. If you move to the left or right, you'll go continuously in that direction until you move the joystick in a different direction.

The object of this level is to travel fifty miles, and each time you move through an opening in the forest you have traveled one mile. Navigating through an opening is difficult with all the Pteranodons swarming down at you. You'll be carried back five miles if one of these flying creatures "blops" you. While avoiding the Pteranodons is tough enough, you must also avoid the flaming walls.

I found this to be one of the toughest events in the game, but like any game, it got a lot easier with practice.

Diamonds In The Rough

Remember the saying, "Diamonds are a girls best friend?" Even back in the old days, this saying held true. A cave man's mate is a bit greedier—she demands several diamonds a day. No diamonds, no dinner!

Diamonds were located deep in the prehistoric forests, and were guarded by the fearsome looking Tiberian Bats. As you travel through the forest you must dodge the bats.

In this scenario, you are in constant motion and can only move up and down to avoid the bats. This is no leisurely stroll as you are travelling at a pretty hefty speed.

Adding to the difficulty is the fact that you blend in with the forest behind you, and you may lose track of your cave man at times. But it's either have dinner or be dinner, so you have little choice but to tough it out and find those diamonds!

A Mammoth Traffic Jam

It's been quite a tough day, and it's finally time to mosey on home. What a relief it would be if you could only find some way around this horrible prehistoric rush hour traffic.

Can you imagine travelling through rush hour traffic without a traffic light or patrolman? Or only having access to a one lane highway? Worse yet, you don't have a horn. And to top it all off, you're in the midst of a traffic jam consisting of wooly mammoths! What's a cave man to do?

You move through the traffic by moving your joystick up, down, left, and right, but once you begin moving in a direction you'll continue in that heading until you move the joystick in a different direction.

This is the last event in the game, and is fashioned after the classic Frogger game. I found it near impossible to cross the lanes of herding elephants; it helps if you study the patterns of the mammoths.

In Conclusion...

A Day in the Life is a terrific game packed with tons of laughs, fun, and challenges. One of the nicest features is that it actually contains six entertaining games all in one package. The bitmapped graphics give the game a great appearance. The only downfall to the entire game are the waits encountered between each of the events due to the frequent disk accesses. That aside, Creative Pixels and J.C. Hilty Productions have another hit in their hands!

- Sherry Freedline

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GAMES MINIVIEWS

Navy Seal

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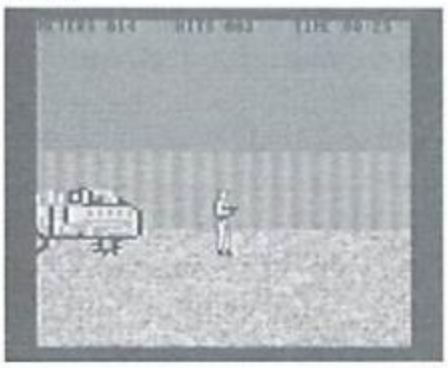


Navy Seal lives up to the rigorous requirements of this elite Navy Special Warfare force. The game requires you to remember keyboard controls, and sometimes requires you to use both joystick and keyboard controls at the same time. This can be difficult, but then life as a Navy Seal is demanding. You'll need to remind yourself of this fact repeatedly as you attempt to complete your assignments.

As a new recruit you'll begin your Navy Seal adventure with Basic Training, which consists of four segments: marksmanship, an onland obstacle course, an underwater obstacle course, and climbing and rappeling. Upon completion of each phase of the training program you receive a rating. And, after completion of all four segments, you'll receive an assignment based on these combined scores. The training program may be repeated again to improve your rating; this enables you to qualify for other assignments. Completion of each assignment requires you to be quick and alert, and timing plays a huge factor.

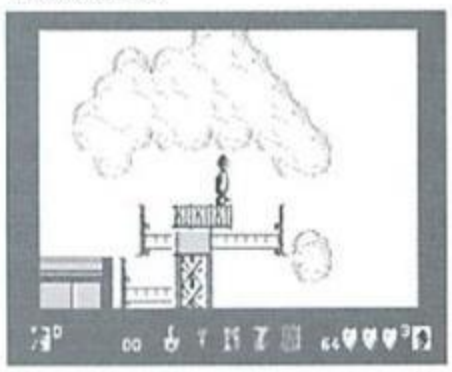
Navy Seal is packaged with a very attractive, well-written, eleven page Basic Instruction Manual. Reading this manual before starting to play the game is a definite prerequisite, as the manual provides you with an explanation of the controls and provides necessary directions for completing the assignments. The Basic Instruction Manual also provides an interesting background piece on the Navy Seal program, and the criteria for becoming a Navy Seal.

I found the graphics and sound effects in the Navy Seal game to be average. One of the first things to catch my eye was the text in this game; I found it hard to believe that the manual and game were both produced by the same people. Fortunately, the text is not a key factor in game play—it simply detracts from the overall appearance of the game. If you're quick with a joystick and possess a persistent nature, you'll enjoy the challenge of Navy Seal!

- Sherry Freedline

The Blues Brothers

Titus; $29.95



I'll admit it right off the bat: *I love this game!* I'm not sure why, especially since I'm really very frustrated with it right now. I don't think it's just because it's one of those addicting scoot-the-little-guy-around-the-levels-and-collect-things-while-bopping-baddies games, like Mario Brothers. I don't usually care much for those kinds of games—I get too frustrated. I don't think that it's because the gameplay is all that spiffy; it plays pretty much like you'd expect, pretty much like other such games. With the exception of basic information like how many hearts or records are worth what, documentation isn't even needed. That's actually a good thing, since the single, poorly Xeroxed instruction sheet that came with the game doesn't provide much more than that.

Maybe what I do like is the Blues Brothers motif. Oh sure, I guess it's all just window dressing, and that the little figures running around could look like penguins or peanut butter, and it would still play the same... but somehow all the Blues Brothers details help make the game work for me. I like to watch Jake grab his hat when he jumps. It's funny to see him wallow through the vats of icky liquid and poke around in various stores, alleys, vaults, factories, and so on that make up the game's different levels. His little figure even bounces when he walks and stops and dances a bit once in a while. And there's plenty to dance to. The soundtrack, featuring songs from the movie itself, is great, full of grungy, bluesy melodies and snare drums. The music takes all three voices on the Commodore, so you don't get any other sound effects, but that didn't bother me at all. I'd rather hear the music.

The graphics scroll smoothly and are nicely detailed, although not quite as snazzy as the screen shots on the box. Even so, they do a pretty fair job of capturing the feel of the Chicago cityscape of the film. There are plenty of surprises, ranging from the conventional (conveyor belts and lifts) to the unusual (umbrellas to drop the hero more slowly) to the hilarious (I won't tell you what the birds do to you).

I did have some trouble trying to select which of the Blues Brothers I wanted to play. The game box promises simultaneous two player action, but since the documentation covers every type of computer including the Atari 800 and something called a CDC, I'm not sure they mean that you get this in the Commodore version.

But all that is behind me. I'm frustrated with it right now. I fell off the antenna on the roof too many times and now I have to start over. Stupid bird. Maybe if I give it one more shot...

- Steve Vander Ark

Island of the Dragon

Creative Pixels; $19.95

The Island of the Dragon may convince you that lands populated with prehistoric creatures such as Blue Dragons, Pteranodons, Triceratops, Dimetrodons, and Stegosauruses actually do exist. You'll experience a science fiction style adventure as a futuristic man meets and battles with these prehistoric creatures.

Jack Roberts and his girlfriend Linda were flying in their aircraft when they encountered a tropical storm. After flying for a few hours, the plane began to sputter as it ran out of fuel. Fortunately, there was an island right below them, and Jack managed to crash land the plane.

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The landing renders Jack unconscious, and is startled upon awakening to find himself face to face with Wycorn the dragon. Wycorn tells Jack that an evil Wyvern Reptilican has taken Linda to his fort, and Jack sets out to rescue Linda from this diabolical creature.

Jack must visit seven different locations where he combats prehistoric beasts to gain strength and items required to venture to the Fort of the Reptilican.

My favorite site was The Caverns of Wyvernia where Jack is lost in a maze of blue dragons; he must find his way to a dragon egg.

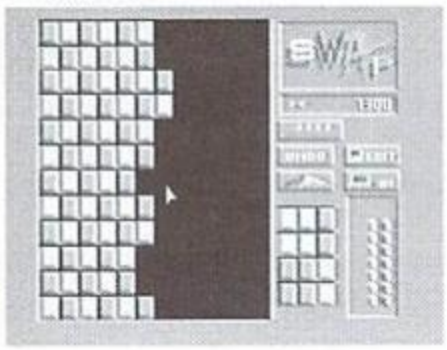
One of the sites Jack must visit is completely text-based, while all of the locations are in an arcade fashion. Jack must throw punches, kicks, roll, and use his Swiss Army knife to defeat the sinister creatures.

The game has little music or sound effects. Game play is average as several sites resemble previous sites only with a different creature. If you like a challenge this game will keep you occupied for quite some time—I've yet to beat one level!

- Sherry Freedline

SWAP

Titus; $29.95



It's kind of hard to describe Swap. To say that it's a strategy game is certainly true, but that's not very helpful really. Someone told me it was "sort of like Tetris without moving." While that makes the game sound frightfully dull, it is actually not a bad description. It does look like a Tetris type of game, too, with a playing field made up of a colorful geometric pattern and extra colored shapes stacked to one side. In some ways it acts like Tetris as well; when you get shapes of the same color adjacent to each other, they disappear. You do this not by dropping them here and there but by simply swapping one shape and its neighbor. And, like Tetris, your goal is to clear the board.

There are some big differences between this game and Tetris, differences which for me make it a game I will play over and over again. For starters, it is actually very possible to clear the board once and for all in a level, although it isn't required to move on to another level. Also, there are various helps available, more or less of them depending on level. These include a "bank" of extra pieces and an "undo" button, which is a lifesaver, let me tell you. My favorite help button is the one called avalanche; press it and all the pieces you've left hanging up on the board come dropping down where they get a second chance at finding a mate. Imagine if you could do that in Tetris!

The game starts you out on level one, of course, although you can save your game and then start it up later from whichever level you had been at. When you've finished a level—which you know you've done because you've accumulated eight stars on the scoring panel—you can move on. The computer figures out which level you qualify for based on the number of swaps you made (less is better), how many times you hit the avalanche button, how many extra pieces you brought in from the side of the board, and so on. During my first game I went from level one to level seven, for example. As the levels progress, the shapes change, which means your strategy must change; triangular shapes swap differently than square ones, for example. At some levels you are given a supply of credits (which show up as ingots on the side of the screen) with which you "buy" swaps. Every time a shape vanishes, you earn credits back. You can play until you can't afford to buy another swap. Other levels include a time limit. There are a lot of levels, at least ninety according to the manual.

All in all, this is one strategy game you won't get tired of very quickly. The documentation is excellent, including plenty of hints and complete instructions. There's even a practice mode in which you can design your own levels with various combinations of features. The graphics are a pleasure to look at and the gameplay is positively addicting. Titus has certainly found a winner here.

- Steve Vander Ark

Wings of Circe

Creative Pixels; $19.95

The introduction to *Wings of Circe* immediately captures your attention with it's startling, but fitting musical score. While viewing the story behind the kidnapping of Odysseus, you're treated to some outstanding bitmapped graphics and animation.

Odysseus' abduction is relayed to Circe by a wizard, who then transforms her into Pegasus (a flying horse). This is when you assume the role of Circe—er, Pegasus, and begin the quest to rescue Odysseus. Clues as to the whereabouts of Odysseus are won only by successfully competing in four challenging arcade-style battles; Battle of the Dragons, Attack of the Hawkmen, Cavern of the Monsters, and The Skeleton Army. A victory in all four battles leads you to the Final Battle where you'll come head to head with Odysseus' kidnapper.

The bitmapped graphics and sprites are excellent, and the only thing missing was music (though there are sound effects) which would add to the suspense of the game.

I quickly became addicted to *Circe*, as I kept thinking, "Next time I'm sure I can do it!" Which reminds me, it's time I wrap up this review and find out how this game ends!

- Sherry Freedline

Escape Route

Creative Pixels; $19.95

Escape Route - The Adventures of Eric Hawthorne, Private Investigator will have you searching for your trench coat and magnifying glass as you attempt to solve the case of recovering the rare ACME diamond for the APEX detective agency. In three short weeks you must recover this gem, stolen by the IceLady! You must catch up with the IceLady who has a 4000 mile head start through various tasks and events.

Escape Route will take you back to the genre of `50s and `60s B-Movies. The game is comprised of seven different tasks, each represented as icons on the main screen. Eric flashes randomly on each of the icons, and a press of the firebutton assigns you the task he's on at that time. You've got to be quick and lucky to get the event of your liking.

You'll encounter giggle and fear provoking events, and other events which will require your best fighting and detective skills as you race to capture the IceLady. These events consist of a Piano Drop, Roulette, Expenses, Driving, Gems, The IceLady's Castle, and Flat Tire.

Thanks to Creative Pixel's detailed bitmapped graphics you can't help but become attached to Eric. The music is delightful and addicting. Don't be surprised if you find yourself occasionally humming along to the main tune.

Escape Route requires frequent disk access, but you'll soon forget the brief intermission when you are once again returned to the game for more of Eric's antics.

Time is wasting, so put on your trench coat and clean off your magnifying glass—you've got yourself a case to crack!

- Sherry Freedline

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HARDWARE IN REVIEW

SmartTrack

I hate mice. Not only do I hate the little furry rodent kind, but I also hate computer mice. It's not like I haven't tried to like either kind—my kids had a pet mouse for awhile; its cage took up space and it died even after proper care. For some reason each of the Commodore 1351 mice I've had (three of them as a matter of fact), took up desk space and also died early deaths.

When I heard CMD planned to create a trackball which would be compatible with programs that were written to accommodate the 1351 mouse, I knew I'd be first in line to be clamoring for it. Little did I know I'd be first to actually have one to use and write about. Yes, I know, it's a little unusual writing a review about a product that's manufactured and sold by the same company producing the magazine. CMD has a long history of integrity, and I won't compromise mine or that of their magazine by writing a sugar-coated review. I'll report my findings, with both my likes and dislikes.

Small But Smart

My SmartTrack arrived in a small white box with a utilities disk and a Users Guide. The trackball is about 1x5x4 inches, quite a bit larger than the 1351 mice I've used. It's light beige, blends in with the rest of my Commodore equipment, and looks natural on my desk. The ball (on the lower left side) is medium grey and smooth, while the surface of the whole unit is slightly textured. The nonskid pads on the bottom keep it from sliding around while in use, but at the same time allow it to be easily moved out of the way when not in use.

The SmartTrack I'm using is a prototype, and I was told to keep my inquisitive nature in check and not take it apart to see how it works, as the circuitry in my particular unit was "tacked in." Letting my imagination get the best of me, I envisioned CMD's techs in the backroom using a bit of bubble gum here and a piece of tape there to hold it all together—I can't tell you what flavor gum was used in this process.

Unlike the 1351 mouse, SmartTrack has three buttons on the upper right hand side. Presumably, to use the trackball you rest your right hand on front edge, and use the side of your thumb to control the ball; your index, middle and third fingers would rest on (and control) the buttons at the top. In practice, I tend to use my index finger to control the trackball—my thumb just doesn't seem to be as coordinated as my index finger.

Glancing through the manual, I found out why they call it "smart." The thing can tell time. My kid's pet mouse certainly didn't have that talent! Using a supplied program called Smart-Tools—an icon-based time changing program—I was able to check the time and date preset by CMD. I was a little disappointed because the battery in SmartTrack had kept the correct time and date during shipping; thus, I really didn't need to change anything. I decided to set the display mode to AM/PM since it defaulted to showing the time in 24 hour mode.

GEOS appears to be the only software currently capable of using the time and date capabilities of SmartTrack, via an autoexec supplied on the utilities disk. The manual and disk, however, supply very complete information, so that programmers can utilize all the features of SmartTrack in their software. The amount of documentation and source code provided is impressive—everything from using the clock chip, to programming for either joystick or mouse mode is included in detail. It appears that SmartTrack and SmartMouse are identical when it comes to programming, since both were designed to be fully backwards-compatible with the 1351 mouse.

SmartTracking a New Horizon

Once I glanced through the manual and learned the basics; such as how the trackball (like the 1351 mouse) can be put into joystick emulation mode by holding the right key down while turning the computer on. I couldn't wait to try it out. My plan of attack included GEOS, Fun Graphics Machine, Digimaster, Dialogue 128, Fritzterm, QWKRR128, and any other program that came to mind which allows for a mouse or a joystick.

Runpaint, supplied on the SmartTrack Utilities disk, was added to my list. To be fair—and so I'd have a better excuse to play—I tried each program in every possible combination of modes. I also had a number of games in mind which I felt might be interesting to try with a trackball.

GEOS

While I'm not a heavy user of GEOS, I felt that it would be the logical first testing choice. Since CMD had included special drivers for the SmartTrack, I also wanted to give both the trackball and the software a fair test. Testing GEOS64 and 128 in joystick mode was no problem at all, since I didn't have a mouse driver on my boot disks anyway. This was probably the best place to learn to use the trackball, since it takes almost a different mind set in adjusting to its use. Unlike a joystick, the trackball needs a *very* light touch. Unlike a mouse, which usually requires longer movements across the mouse pad to move the pointer from side to side of the screen, the trackball requires a fluid (not jerky) movement to achieve the same end. It took me some time to learn these things, and one of my lasting impressions from it—once I finally caught on—is that SmartTrack is *not* an aerobic computing device. One uses very little energy to move the pointer on the screen.

In joystick mode, GEOS and SmartTrack functioned better than I anticipated. I expected to have problems with lining the pointer up to items, but this didn't happen. I changed the speed

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adjustments for the joystick to full acceleration as well as slow, and in either case SmartTrack responded in kind. Using geoPAINT and geoWrite, the movements and usage of the trackball were about what I expected. I didn't have any problems, but it didn't take my breath away with its precision, either. Using GEOS with the 1351 mouse driver supplied with GEOS, SmartTrack responded with more precision than it did in joystick mode.

I then copied the AutoSmartTime GEOS clock utility to my boot disk, and rebooted using the SmartTrack input driver supplied on the utilities disk. The autoexec read the clock chip from the trackball and automatically set the time and date for me. I have another CMD device with a Real Time Clock, and hadn't considered the clock chip in the SmartTrack a big deal until I saw this autoexec in action. I don't usually use my other RTC-equipped device with GEOS, so I'd been missing out on the benefit of having the time and date automatically set. Since I'd be using SmartTrack with GEOS each time I boot, I don't need to worry about setting the time or date with GEOS again. This I like!

I didn't notice much difference using SmartTrack's GEOS input driver—until I started taking advantage of the middle button's "Turbo" mode while playing Mahjong and while zipping around the menus. Using the right button to double click on items was also a big plus. SmartTrack really shined in geoPaint, as I've often tried using other input devices to simply write my name using various paintbrushes. Finally, I've found an input device for geoPAINT that gives the kind of drawing accuracy I've been looking for! Using other input devices, such as a mouse or a joystick, my signature would come out looking like I had just learned to write. With SmartTrack, because I controlled the speed of the movement with the ball and could move the paintbrush in very tiny, finite movements, my signature not only came out looking like it does on paper, it actually looked *better!*

While I mentioned that I'm not a big GEOS user, I have to admit that using SmartTrack made GEOS a lot of fun to use. After a hard days work (yeah, right!) testing the trackball on various other programs, I decided to have just one more game of Mahjong in GEOS. While testing SmartTrack with other programs, I had changed the joystick port the trackball was plugged into. To my surprise (and pleasure), AutoSmartTime was nice enough to inform me that it couldn't find SmartTrack when I booted GEOS. I realized immediately that the trackball was in the wrong port. This meant I'd have to turn the computer off to change it, but I appreciated being informed of this before fully booting GEOS and finding I didn't have control over the pointer. Knowing me, I'd have been scratching my head wondering what I did wrong instead of realizing the trackball was simply in the wrong port.

SmartTracking Other Software

Since Dialogue 128 is one of the few non-graphic programs that support the 1351 mouse, I tested it next. Reading the manual, I found I had a choice in the way I wanted to use the menus in the program, depending on how I chose to use SmartTrack. After making three different work disks, I set out to try all three. The first choice was GEOS style menus, using the trackball in joystick emulation. This had me a bit concerned about using the trackball at all with Dialogue, as the pointer moved painfully slow. The next try was more successful, using GEOS style menus with the trackball in mouse mode. The slowness of the joystick emulation was apparently only a problem with that emulation, and the pointer now moved with ease across the screen. The third test, Amiga style menus, proved more interesting, but took a bit of getting used to; it required holding down the right button until the desired option was highlighted, then releasing the button to select the item. After a few tries, it became quite easy.

Since I'd been using a term program, I decided to try out QWKRR128's joystick abilities with SmartTrack. I had tried using a joystick with this program before but gave it up because it seemed awkward to hold the joystick and set it down to reply to mail. Using the trackball, however, was as easy as using an Icontroller joystick, after much trial and error. While Dialogue 128's joystick mode was painfully slow, QWKRR128 was just the opposite. I soon learned to use minuscule movements on the trackball to read the mail. Since I'd previously been using the space bar with this program, SmartTrack was not only quieter—it also saved wear and tear on my keyboard.

Graphic Programs and Games

Next I tested Runpaint in both 64 and 128 modes. I'd never used this program before, and found it offered a great deal for learning to use the SmartTrack. In mouse mode, it offered the same precision that I had found in geoPAINT, with one exception—it required holding down the left button while drawing. I discovered that I could turn SmartTrack sideways on my desk, press the button with the finger of one hand, and use my index finger to control the trackball and draw on the screen. Try *that* with a mouse or joystick!

Fun Graphics Machine allowed me to use SmartTrack in its joystick mode, but didn't allow me to do much in the way of drawing with it except in pixel edit mode. It seemed most beneficial in using the menus and selecting files to load from disk.

I also tried SmartTrack with a variety of games in joystick mode. For some games, it seemed a natural choice, such as in mahjong and other solitaire style games which don't require fast reaction. Any shoot-em-up games or other fast action types were less than satisfactory, and I'm not at all surprised. For these a true joystick is really the only choice. One game, Boulder Dash, which I hadn't played in ages, was actually very enjoyable with SmartTrack. I didn't judge its performance based on my score, but was pleased to note that my score improved on the second and third games. It seems to me that I was becoming more proficient in my use of the trackball with each game.

Grumbles

Most of my complaints about SmartTrack are ones I have about joysticks, trackballs and mice in general. Commodore was kind enough to give us *two* joystick ports—which is nice for two player games. Personally, I find switching which port the trackball is in a tedious process, made more so, since the computer must be turned off to avoid damaging your equipment.

For 128 owners needing the computer in 64 mode and the trackball or mouse in joystick mode, this can be quite a sight for onlookers—turning the computer off then on, quickly holding down both the Commodore logo key and the right button on the trackball.

A truly intelligent device, I would think, would plug into both ports at the same time and have a switch on the device itself to switch which port is being used. Another switch to select joystick or mouse mode would be another plus.

Do I Like It?

Aside from these grumbles, I really can't find much fault with SmartTrack. It's small, fits on my desk without taking up too much space, its coloring blends with my other equipment, and it functions better than I anticipated it would. The price is a bit steep, but considering that it's fully backwards compatible with the Commodore 1351 mouse *and* has a built in clock chip, I think it's cost is justified.

I guess a true gauge of how much I like SmartTrack would be whether I could easily unplug it, box it up and send it back to CMD. With some devices (especially mice and joysticks) this would be easy, and I'd never miss the thing. SmartTrack, however, is another story—I don't wish to be without it now that I have it!

- Les Songa

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Graphic Interpretation

by Steve Vander Ark

STEVE COMES UP WITH HIS 'MUST-HAVE' LIST OF GEOS GOODIES

You've heard the saying that the only things in this life that are certain are death and taxes. My wife has her own version of that list: death, taxes, and the fact that there will always be one more computer thing that I want to spend money on. She's absolutely right. I try to fake it, try to say things like, "Now I've really got the best system around, honey!" But she's not fooled. She's come to realize that in this hobby there's always something new and exciting and powerful coming along. Something that will cost a significant amount of cash.

This is particularly true for the IBM compatible and Mac. Just after the school where I teach put thousands of dollars into a room full of Macs, the new Power PC's came out, promising to make all previous Macs and PC's obsolete. Just when I finally broke down and bought an IBM compatible for my home, a very expensive machine with a processor called a "386," they came out with a "486"—and now I can't run any of the really powerful new software. There are always amazing new versions and amazing new programs—and they all cost amazing amounts of money.

You might think that you're safe in the comfortable world of Commodore and GEOS. All that high powered hype and those newfangled gadgets priced right up there with condos and yachts aren't built for the Commodore. But think again. The bad news is that the wonderful world of GEOS can be a pretty expensive place. The good news is that, by comparison, you can get a lot of power for not all that much money. And your Commodore will be able to do a lot of the

things that other computer users have to take out a second mortgage on their home to do.

If you've been reading my columns over the years, you'll probably figure you've heard this all before. I have written columns for other magazines detailing what I consider to be the ultimate GEOS system. I have talked up quite a few products over the years, products which I consider essential for using GEOS. But I have changed my list slightly, taking into account some of the newer products, so you still might want to give it a look. And if you're still fairly new to GEOS and want to know to what stellar heights your system can take you for a few hundred dollars more, this column is definitely for you.

Any serious GEOS user must be running version 2.0. I write this column assuming that readers are in fact using the upgraded version. The difference is striking. The advanced features and capabilities of the 2.0 version are well worth any upgrade cost you might have to incur. But while you're at it, you might as well upgrade to GEOS 128. Okay, you might have to also upgrade to a 128 computer in the process, but I told you this was going to cost a little money. Of course, a 128 requires an 80-column monitor as well, so the numbers keep adding up. Before you panic, let me reassure you that everything else I talk about from here on in will actually work with either the 64 or 128 versions of GEOS. I just happen to love that 80-column screen, especially for geoWrite. There is also a new desktop publishing package in the works for GEOS which will take advantage of the 80-column screen, and that is one powerful piece of software you won't want to miss out on.

Once you've upgraded to GEOS 2.0 (either machine), you're ready to talk hardware. You need disk drives, of course, and there are several to choose from. You will need to have a 5-1/4 inch floppy drive since every GEOS software product is available in that format, and most aren't available any other way. Don't get a 1541 single-sided drive if you can possibly get a 1571 instead. The 1571 gives you access to either single- or double-sided disks, making it much more versatile. It is nice to have a drive that will handle the 3-1/2 inch disks as well, since they hold much more data. The 1581 is fine, but as long as you're spending the money you might as well get an FD drive from Creative Micro Designs. This powerful new drive can use high-density floppy disks for larger storage capacity.

Now comes the most essential piece of equipment for GEOS next to a floppy drive: a

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RAM device. There are several types of RAM devices on the market, some much better than others, but having one of them, even the lowest powered REU, is absolutely required. Oh, GEOS will run without it, that's true, but not very well. Some of the most essential software, in fact, will not run without a RAM device. So if you intend to use your GEOS system for anything other than the most basic word processing or drawing, you'll need a RAM device.

There are basically two kinds of RAM devices for the Commodore: ones that keep the information stored on them intact even when you shut down your computer, and those that don't. The latter include the Commodore REUs and the geoRAM unit made by Geoworks itself. These are fine and will certainly keep your GEOS system running at top speed. But you can do better. The best type of RAM device for GEOS is undoubtedly the RAMLink.

The RAMLink is a rather large box that plugs into your cartridge port. It can be purchased without any RAM—in which case it acts as a way to connect your existing REU to your computer and keep it powered. It can also be purchased with RAM added. When running under GEOS, a RAMLink becomes a super fast and powerful RAM disk drive and also stores system information like a conventional REU so GEOS runs faster. You can also include Real-Time Clock chip which will automatically set your GEOS date and time when you boot your system, and/or a battery backup unit which will carry your data safely through a blackout (something I wish I had here in Michigan as the summer thunderstorm season rumbles through).

A GEOS system with several drives and a RAMLink needs a powerful file manager, one more capable than the deskTop which came with your GEOS package. The deskTop can't handle the power of the FD drive or the RAMLink's native mode RAM disks, so you need to look elsewhere. Creative Micro Designs, the ones who sell both of those high-powered devices, have released a file manager called Gateway which includes device drivers for those devices. Gateway still has a few bugs connected with large-scale RAM disks, though I am told that these bugs have been nearly eliminated. Perhaps by the time you read this there will be new improved "native mode" drivers available to make Gateway the top contender. Another excellent choice is DualTop 3.0, available from James Robbins, 326 Fern Street, 2nd Fl., Lindhurst, NJ. DualTop is able to access all the new and powerful devices as well as long as you load it out of Gateway.

I have run out of space for this issue. Check out CMD's advertisements elsewhere in this magazine for prices on the FD drives and the RAMLink. And check this column in our next issue for more of What You Gotta Have for GEOS.

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geoProgrammist

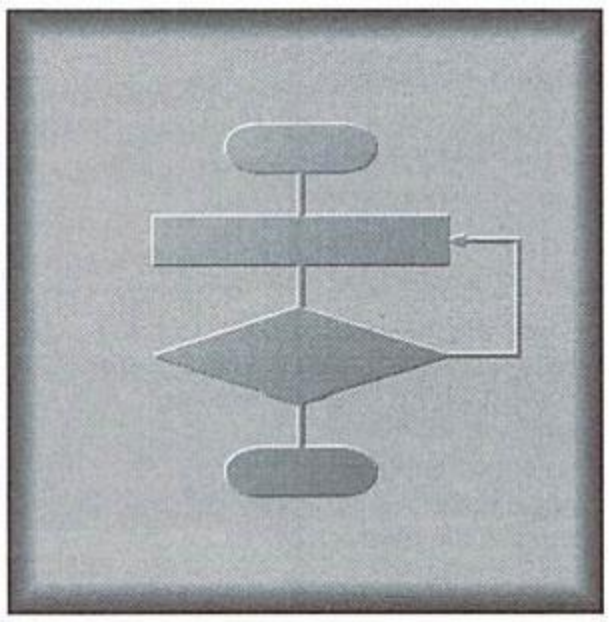
By Maurice Randall

DEALING WITH GEOS PROGRAM MEMORY

Just as with any other operating system, when we write programs for GEOS, we need to know where to locate the programs within the computer's memory. Generally, the place to load an application is at the start of the normal application space; this area begins at $0400 for both GEOS 64 and GEOS 128.

When GEOS 128 was developed, it was designed to be very similar to the 64 version—thus, much of the memory layout is the same. Unless you're creating an application that will require the additional memory or specific capabilities found only in the 128, you need not be too concerned about the differences and additions that were made to the 128 system. In fact, you won't even need to know anything about the banking scheme of the 128. For small to moderate projects for GEOS 128, just think of the computer as if it were a 64 and stick to the memory locations that are allowed by the 64. Just so that you know, application programs are always loaded into the BANK 1 RAM of the 128. The 64K of RAM memory in BANK 1—as used by GEOS—is laid out very similar to the entire 64K of RAM in a C-64. Most 40-column programs will run fine under both GEOS 64 and GEOS 128. In a later column we'll learn how to make applications that run in both environments take advantage of the 128's 80-column mode.

Meanwhile, your program code is perfectly safe as long as it resides completely within the area beginning at $0400, as already mentioned, and does not extend beyond $5FFF. You can actually go as high as $7FFF, but with some limitations. This area is often needed by GEOS for a very useful system function—a background screen. This is an area of memory where an entire



copy of the foreground (visible) screen (or any part of it) can be kept. This area of memory begins at $6000 and consists of 8000 bytes—the same number of bytes required to display a 40-column hi-res screen.

By default, anything that GEOS draws to the foreground screen is also drawn to the background screen. By having a copy of the screen, special things can be done such as restoring the foreground screen. This is most evident when using a program such as geoPaint. After drawing with any of the tools, you can click on the 'UNDO' function and your most recent change will be removed. geoPaint is actually copying the background screen to the foreground when this is done. So, when you draw in geoPaint, your most recent change is not really applied until you make another change, at which time the foreground screen is copied to the background screen, thereby making your previous change permanent.

GEOS also uses the background screen to retract menus. When you pull down a menu, it is only drawn to the foreground screen; when you exit the menu, the area of the screen that the menu occupied is restored from the background screen. If your application is large enough, or if it needs a buffer in memory (such as a file copier might need), you could use the area reserved for the background screen. Before doing so, you must make sure that GEOS doesn't attempt to use the background screen while your program is using the background screen memory. The following code can be used to turn the background screen off:

```
lda #ST_WR_FORE
sta dispBufferOn
```

ST_WR_FORE is a GEOS constant that equals $80; this constant is defined within the geosSym file that you should include in any assembly that you do (.include geosSym as shown in Issue 2). The location for dispBufferOn is also defined within geosSym. Before GEOS draws to either screen, it checks the value at dispBufferOn. If only bit 7 is set, as in this example, then GEOS will only draw to the foreground screen. If you wish to only draw to the background screen, you may do so. For this you would set bit 6 and leave bit 7 cleared at dispBufferOn. This could be useful for setting up an entire screen full of data and then displaying it all at once to the foreground screen.

As already mentioned, when your program is first loaded, the default is to have both screens active. Both bits 6 and 7 of dispBufferOn are set at this time. After you have turned either screen off, you can return both screens to active by simply setting both bits 6 and 7. The value contained at

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dispBufferOn should therefore be $C0. With geoProgrammer, the following code would do this:

```
lda #(ST_WR_FORE|ST_WR_BACK)
sta dispBufferOn
```

Since the background screen consists of 8000 bytes, it runs from $6000 to $7F3F. Let's assume your program makes use of the printer. There is an area reserved for the printer driver. It begins at $7900 and ends at $7F3F. When the printer driver is loaded, it will corrupt the lower area of the background screen. Keep this in mind, and be sure to turn off the background screen whenever a printer driver is in use.

If the background screen is being drawn to, the printer driver could also become corrupted. If this happens, the computer will, without a doubt, crash. Once printing is finished, you can restore the background screen by copying the foreground screen to it, and then turning the background screen back on. If you use the background screen, you'll have to load the printer driver each time before using it; if you keep the background screen disabled at all times (very uncommon), then the printer driver would probably need to be loaded only once.

With GEOS 64, the printer driver is always loaded in from disk; GEOS 128, on the other hand, keeps a copy of the printer driver in BANK 0 RAM, and restores the printer driver from this copy. To cut down on excess disk activity, you could make program so that it stores a backup copy of the printer driver in an unused area of the application memory when run under GEOS 64.. Doing something like this is entirely up to you as the programmer, provided you have some unused RAM available for doing this. This is something you would decide as you develop your program.

Copying either screen, or parts thereof, from one screen to the other is easy. To copy the background screen to the foreground, you simply define a rectangular area of the screen and then call a GEOS Kernal routine known as RecoverRectangle. Likewise, to copy the foreground screen to the background, you would call the ImprintRectangle routine. The following code will restore the upper half of the foreground screen by copying it from the background screen:

```
lda #0
sta r2L         ; top of rectangle
sta r3L         ; left side (low byte)
sta r3H         ; left side (high byte)
lda #99
sta r2H         ; bottom
lda #[319
sta r4L         ; right side (low byte)
lda #]319
sta r4H         ; right side (high byte)
jsr RecoverRectangle
```

For GEOS 128 operating in 80-column mode, this would only restore the upper left quarter of the screen.

GEOS is very flexible with memory usage within the program space. We're not restricted to loading our application at $0400. It can be loaded at $1000, $5000 or wherever. In addition to this, our program code doesn't have to begin at the very start. You can tell GEOS to jump to any routine you wish after the program is loaded. Within the header block of the file, the address defined by bytes 75 and 76 ($4B, $4C) tell GEOS where to jump to. You don't have to know the exact location of your routine. Just put the name (label) of the routine at this location in your header file; geoLinker will take care of the correct address for you. After you've worked with GEOS for awhile, you'll realize that when working with the memory, there really isn't a great deal to remember.

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BASIC INSTINCTS

STARSHIP COMBAT PART II

NEW SHIPS, COMBAT, & SCENARIOS
LEARN ABOUT BASIC AS YOU CREATE AND PLAY

by Gene Barker

Newcomers

In *BASIC Instincts* we are building a large game named *Starship Combat* that spans across the last five issues for this year. This is the second installment of the series. Starship Combat is a science fiction strategy game written in Commodore BASIC v2. In the process of building Starship Combat, we're developing our BASIC programming skills. Best of all, we're having fun doing it!

Although this column is designed for beginning BASIC programmers, experienced programmers may want to follow along and review Starship Combat's advanced use of subroutines, strings, and arrays.

What? You don't have the first installment from the last issue. Well, go out and grab a copy! Don't miss out on the fun.

Notes

Starship Combat is a large BASIC program. As you type in Starship Combat, take it one section at a time. Read the comments for the section both in the article *and* in the BASIC text. Try to get a general idea of what the section is accomplishing. See if you can follow how the section is using its variables (use the handy charts and variable definitions below). If you see an unfamiliar BASIC statement, take a quick look at it in your BASIC manual. If you are still confused, move on to the next section; often the next section helps explain the previous one.

On a final note, BACKUP your work frequently. Don't allow a massive bolt of lightning to destroy hours of work—or your sanity!

Combat

In this issue, we'll focus on Starship Combat's combat system. We'll also do a fair amount of work on the game's initialization routines. Before we begin programming, let's take a look at the game's ship types.

The Ship Type Chart contains the specifications for both the Union and Alliance starship fleets. With a little work, this information will fit nicely into the TY$ and TY% arrays we created in the last issue. We also need to expand the number of fields in the Active Ship List array SL%.

Notice that there are four new fields since the last issue (fields six through nine). These new fields will help us track the status of a ship's shields and superstructure, as well as the number of torpedoes remaining on board. We can find additional information on a ship in the Active Ship List by referencing the ship type arrays TY$ and TY% as follows:

TY$(SL%(SH,0))	Name of ship SH in the Active Ship List
TY%(SL%(SH,0),y)	Field (y) ship type data for ship SH in the Active Ship List

For example: TY%(SL%(2,0),6) gives us the initial number of torpedoes carried by the third ship in the Active Ship List.

There are a number of weapons available in Starship Combat (see the weapons charts). As you can see, we have two classes of weapons: phasers and torpedoes. Phasers are beam weapons and are limited only by the number of energy units you have on board. Torpedoes are projectile type weapons. Due to their large size, starships carry only a limited number. The Union torpedoes are the most advanced. They are just as effective at both long and short ranges, and require little power to launch. Alliance torpedoes use a different technology. The shredders are composed of hundreds of small projectiles which spread out as they travel, and hence do better damage short range than long. The plasma weapons damage similarly since they hurl wicked balls of plasma which dissipate as they travel. Although the plasma weapons can cause heavy damage to an opponent,

Active Ship List

SL%(SH,0)	Ship type [0-9]
SL%(SH,1)	Sector number where ship is located [0-99]
SL%(SH,2)	X Coordinate of ship's location in the current sector [0-9]
SL%(SH,3)	Y Coordinate of ship's location in the current sector [0-9]
SL%(SH,4)	Current number of movement points available
SL%(SH,5)	Amount of energy units remaining in the ship's reserves
SL%(SH,6)	Number of damage units the ship can absorb without damaging its superstructure
SL%(SH,7)	Number of damage units that can be absorbed by the ship's superstructure
SL%(SH,8)	Number of torpedoes available
SL%(SH,9)	Ship number [0-24] used for ID purposes

SHIP TYPE CHART

#	TY$	Name	TY%(x,y)	MP (0)	Pwr (1)	Shld (2)	Sup (3)	PH (4)	TP (5)	#TP (6)	Item List (7)	(8)	(9)	(10)
0	TY$(0)	UN Scout	TY%(0,y)	3	500	50	65	0	0	5	0	5	x	x
1	TY$(1)	UN L-Dest	TY%(1,y)	4	750	80	100	1	0	15	0	2	6	x
2	TY$(2)	UN Destroy	TY%(2,y)	4	850	100	140	1	1	14	0	3	4	5
3	TY$(3)	UN Cruiser	TY%(3,y)	6	1000	200	300	2	1	24	1	3	5	6
4	TY$(4)	UN Battle	TY%(4,y)	5	1250	225	500	3	2	24	1	3	5	6
5	TY$(5)	AL Hunter	TY%(5,y)	3	480	40	50	4	3	2	0	2	x	x
6	TY$(6)	AL Destroy	TY%(6,y)	4	725	75	100	4	4	8	0	4	x	x
7	TY$(7)	AL Frigate	TY%(7,y)	5	800	90	150	5	4	12	1	4	7	x
8	TY$(8)	AL LCruise	TY%(8,y)	7	900	150	250	6	5	10	1	3	4	5
9	TY$(9)	AL HCruise	TY%(9,y)	6	1100	200	400	6	6	10	1	3	5	x

ARRAY DEFINITIONS

Entry	Definition
MP	Number of movement points available per round
Power	Maximum energy units the ship can retain
Shld	Maximum number of damage units the ship can absorb without damaging its superstructure (hull)
Sup	Maximum number of damage units that can be absorbed by the ship's superstructure
PH	Phaser weapon type (using the Phaser Type Chart below)
TP	Torpedo weapon type (using the Torpedo Type Chart below)
#TP	Number of torpedoes carried on board
Item List	List of additional items on board the ship (used in later issues)

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they consume an incredible amount of energy. The dissipation of the shredder and plasma torpedoes is reflected by the Taper field in the Torpedo Type Chart.

We need to create some new arrays for the weapons. As before, we will use integer arrays (by using the % following the array name) to save as much variable space as possible. In BASIC, integers consume two bytes each and real numbers consume five.

You'll find the appropriate array names listed in the charts. The game's initialization routines set up the arrays just as they are found in these charts.

Scenarios

For enhanced game play, this issue of Starship Combat offers four different combat scenarios. Like the last issue, the Active Ship List array SL% represents all of the active ships in the game. Last time we had only one set of data for the ship list. Now we have four different sets of data which represent each of the scenarios.

#	Scenario	Notes
1	The Sweep	Your small battle group is assigned to clear the local area of enemy vessels.
2	Seek & Destroy	Seek out any enemy vessels in the area and engage.
3	The Dual	A large enemy battle group has been detected in the area; a worthy match for your highly decorated battle group.
4	Armageddon	The largest battle groups ever assembled face off in all out combat.

These scenarios are represented by a collection of DATA statements in the game's initialization routines. Each ship in a scenario is represented by four values in a DATA statement. For example:

```
DATA 3,25,4,3,1,40,2,2
```

This statement has two ships listed in it: a ship type of (3) located in sector (25) at the coordinates of (4,3) AND a ship type of (1) located in sector (40) at the coordinates of (2,2). The DATA statements use the value of (999) to represent the end of a scenario's ship list AND the value of (1000) to represent the end of all scenario related DATA statements. See if you can follow how the routines use these values to skip scenarios.

Additional Information

The rest of the substantial changes can be found in the process Union ship turn routine. The routine is well documented in the program listing. After you enter the changes to Starship Combat, you'll be able to blast Alliance ships with your new weapons. In the next issue we'll concentrate on bringing the Alliance up to speed (plus a few new surprises).

For your convenience, a list of the important variable definitions is included below. The new variables are in bold text. You'll also find comments on the new sections of code.

PHASER TYPE CHART

#	Name	PH%(x,y)	Power (0)	MP's (1)	Damage (2)
0	Light Pulse	PH%(0,y)	4	2	10
1	Pulse Mark I	PH%(1,y)	5	2	15
2	Pulse Mark II	PH%(2,y)	8	3	25
3	Multi-Pulse	PH%(3,y)	12	3	40
4	Disruptor	PH%(4,y)	5	2	18
5	Disruptor-T	PH%(5,y)	7	2	26
6	Phase Inducer	PH%(6,y)	10	3	38

TORPEDO TYPE CHART

#	Name	TP%(x,y)	Power (0)	MP's (1)	Taper (2)	Damage (3)
0	Stinger	TP%(0,y)	1	1	0	25
1	Harpoon	TP%(1,y)	2	2	0	50
2	Harpoon HD	TP%(2,y)	5	2	0	100
3	Shredder	TP%(3,y)	3	2	2	30
4	Shredder II	TP%(4,y)	5	3	3	50
5	Plasma LT	TP%(5,y)	25	4	10	150
6	Plasma XT	TP%(6,y)	50	5	20	400

Power	Number of energy units the weapon consumes per use
MP'S	Number of movement points required to use this weapon
Taper	Number of damage points this torpedo loses per square of travel
Damage	Number of damage points this weapon inflicts upon its target

IMPORTANT VARIABLES

NT	Number of ship types available
UT	Number of union ship types available (union ship types must be first in the TY arrays). Used to detect whether a ship is from the Union or Alliance.
TF	**Number of fields in the TY$ and TY% arrays**
TY$	Ship type name array
TY%	Ship type statistics array
NP	**Number of phaser types**
PH%	**Phaser type array**
TS	**Number of torpedo types**
TP%	**Torpedo type array**
SP	**Scenario pointer (used to indicate the selected scenario)**
SK	**Skip counter (used for skipping unwanted scenarios)**
NS	Number of ships that are alive (in the Active Ship List)
NU	**Number of Union ships that are alive (in the Active Ship List)**
SL%	The Active Ship List array containing the current status of each ship
OP	Number of options available in main menu
OP$	Array of possible command characters
SA$	Initialization string for status area
OA$	Initialization string for options area
NA$	Initialization string for notes area
SH	Current ship in the Active Ship List
MP	Movement points available for the current ship
PW	Number of energy units remaining for the current ship
XX	X coordinate for the current ship
XY	Y coordinate for the current ship
XZ	Sector number for the current ship
DM	**Amount of damage points the weapon will inflict**
RM	**Required number of movement points to fire the weapon**
RP	**Required number of energy units to fire the weapon**
TG	**Active Ship List number of the targeted ship**
SS	**Shield strength of the targeted ship**
TL	**Number of torpedoes left on the firing ship**

MAIN PROGRAM

(New/changed sections since the last issue)

Lines 100-199 (setup main game loop)
- Comments now say "starship combat part ii"

Lines 200-299 (main loop for the game)
- New checks to determine the winner of the game

Lines 300-399 (all Alliance ships are destroyed)
- Tell player all Alliance ships have been destroyed
- Ask player if he/she wishes to play again

SUBROUTINES

(New/changed sections since the last issue)

Lines 10400-10999 (game initialization routines)
- Lines 10400-10499 sets up the expanded ship type arrays TY$ and TY%
- Lines 10500-10599 sets up the new phaser type array PH% and torpedo type array TP%
- Lines 10600-10699 creates the strings SA$, OA$, and NA$ (same as the last issue except relocated)
- Lines 10700-10799 get the desired scenario from the user
- Lines 10800-10949 sets up the expanded Active Ship List array SL% based upon which scenario the user selected
- Lines 10950-10999 sets up the command character array OP$ (same as the last issue except uses a better method and is relocated)

Lines 11400-11699 (update status and map area for current ship)

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- Lines 11400-11499 no longer uses MP and has a few additional print statements for the new fields in the Active Ship List
- Lines 11500-11599 ship ID letter is now calculated using a new field in the Active Ship List so that ship ID letters will not change after a ship is destroyed

Lines 11800-11999 (kill ship)
- updated so that it copies the new fields in the Active Ship List (fields six through nine)

Lines 20000-24999 (process union ship turn)
- Lines 20075-20199 has two new jump points for firing phasers and torpedoes in the ON GOTO statement
- Lines 20700-20799 updated to support the changes in the update status routine; no longer uses MP and uses the new method for determining the ship number
- Lines 20900-20999 fire phasers routine (sets up variables RP, RM, DM, and TL for the general firing routine)
- Lines 21000-21099 beginning of the general firing routine (checks if the ship has enough movement points to fire the weapon)
- Lines 21100-21199 get the target from the user and make sure it's in the same sector (sets TG on success)
- Lines 21200-21299 inflict damage on the target and if necessary kill it
- Lines 21300-21399 update the ship's statistics to reflect the discharge of the weapon
- Lines 21400-21499 fire torpedo routine (sets up variables like the fire phasers routine then enters the general firing routine at 1000)

Entering the Program

Before you enter the lines presented in this month's installment, you should load and run the CHK-LIST utility presented elsewhere in this issue. The numbers that appear along the left side of the listing are the CHK-LIST values. Once you have CHK-LIST loaded and ready, you should load your saved copy of Starship Combat from the last issue. This listing in this issue only includes lines which have been added or changed. Finally, before you start typing in the new lines from this issue, there are four lines from last issue's version which have been deleted. You may remove these by typing the line numbers, one by one, following each with a press of the RETURN key. The deleted lines are:

```
10590
10595
10630
11425
```

After you've deleted these lines, type in the new and changed lines listed in this issue. Be sure to check your results with CHK-LIST, and save your work often to guard against unforeseen data loss.

PROGRAM LISTING

STARSHIP COMBAT

```
10C8 115 rem starship combat part ii
74AB 215 nu=0:fori=0tons-1:ifsl%(i,0)<utthennu=nu+1
820E 220 next
93D2 225 gosub11000:i=fre(0)
F31E 230 : ifnu=nsthen300
A239 232 : ifnu=0then400
4952 233 : sh=999:mp=0
5291 300 rem-
C026 305 rem all alliance ships destroyed
4936 310 rem-
103E 315 gosub11200
42CC 320 print"All Alliance ships have been"
315C 325 print"{CRSR RT}destroyed.{2 SPACES}You have won."
68B1 330 goto425
926E 10430 nt=10:ut=5:tf=11
0279 10435 dimty$(nt-1),ty%(nt-1,tf-1)
05D4 10440 forxi=0tont-1:readty$(xi):forj=0totf-1:readty%(xi,j):next:next
D2EC 10445 data "UN Scout",3,500,50,65,0,0,5,0,5,999,999
7263 10450 data "UN L-Dest",4,750,80,100,1,0,15,0,2,6,999
13E2 10455 data "UN Destroy",4,850,100,140,1,1,14,0,3,4,5
C95C 10460 data "UN Cruiser",6,1000,200,300,2,1,24,1,3,5,6
FD71 10465 data "UN Battle",5,1250,225,500,3,2,24,1,3,5,6
1A9F 10470 data "AL Hunter",3,480,40,50,4,3,2,0,2,999,999
D338 10475 data "AL Destroy",4,725,75,100,4,4,8,0,4,999,999
2F27 10480 data "AL Frigate",5,800,90,150,5,4,12,1,4,7,999
E1AD 10485 data "AL LCruise",7,900,150,250,6,5,10,1,3,4,5
B083 10490 data "AL HCruise",6,1100,200,400,6,6,10,1,3,5,999
1C76 10505 rem setup weapons list
0007 10515 np=7:dimph%(np-1,2):rem phasers
FE58 10520 forxi=0tonp-1:forxj=0to2
2C8B 10525 : readph%(xi,xj)
75C7 10530 next:next
532B 10535 data 4,2,10,5,2,15,8,3,25
DC14 10540 data 12,3,40,5,2,18,7,2,26
862A 10545 data 10,3,38
5786 10550 ts=7:dimtp%(ts-1,3):rem torpedoes
DBCA 10555 forxi=0tonp-1:forxj=0to3
838D 10560 : readtp%(xi,xj)
47F8 10565 next:next
A14C 10570 data 1,1,0,25,2,2,0,50
91D3 10575 data 5,2,0,100,3,2,2,30
281B 10580 data 5,3,3,50,25,4,10,150
CE35 10585 data 50,5,20,400
F6FC 10600 rem-
835B 10605 rem setup string variables
ED5B 10610 rem-
A688 10615 sa$="{HOME}{5 CRSR DN}{CRSR RT}{RVS ON}{LGRY}"
D306 10620 oa$="{HOME}{5 CRSR DN}{23 CRSR RT}{RVS ON}{LGRY}"
4BF6 10625 na$="{HOME}{18 CRSR DN}{CRSR RT}{RVS OFF}{WHT}"
3C0D 10700 rem-
4282 10705 rem get scenario
27AA 10710 rem-
6CB7 10715 printoa$"Select combat"
EFE0 10720 printoa$"{CRSR DN}scenario:"
1E25 10725 printoa$"{3 CRSR DN}(1)The Sweep"
5733 10730 printoa$"{4 CRSR DN}(2)Seek&Destroy"
3710 10735 printoa$"{5 CRSR DN}(3)The Dual"
B3AC 10740 printoa$"{6 CRSR DN}(4)Armageddon"
CA8C 10745 getxx$:ifxx$=""then10745
```


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STARSHIP COMBAT *(cont.)*

```
6FA6 | 10750 sk=asc(xx$)-asc("1")
E85D | 10755 ifsk<0orsk>3then10745
7E5A | 10760 printoa$"{8 CRSR DN}Hold on..."
B4F7 | 10800 rem-
8361 | 10805 rem setup ship list
B4F7 | 10810 rem-
DA75 | 10815 dimsl%(24,9)
77D0 | 10820 ifsk=0then10835
CBD7 | 10825 : readxt:ifxt<>999then10825
62DC | 10830 sk=sk-1:goto10820
1918 | 10835 readxt:ifxt=999thenns=sk:goto10850
9D8A | 10840 : sl%(sk,0)=xt
AAC5 | 10842 : forxi=1to3:readsl%(sk,xi):next
A8CB | 10844 : forxi=5to7:sl%(sk,xi)=ty%(xt,xi-
       4):next
9988 | 10846 : sl%(sk,8)=ty%(xt,6):sl%(sk,9)=sk
3E04 | 10848 : sk=sk+1:goto10835
C826 | 10850 readxt:ifxt<>1000then10850
912B | 10852 rem scenario 1
5B59 | 10854 data 3,25,4,3,1,25,2,2,1,25,6,2
AF43 | 10856 data 5,35,4,4,5,44,4,4,5,46,4,4
53D5 | 10858 data 6,55,3,4,6,55,5,4,999
810A | 10860 rem scenario 2
C921 | 10862 data 0,43,4,4,0,53,4,4,0,63,4,4
1BB9 | 10864 data 2,52,4,3,2,52,4,5
3CAE | 10866 data 5,65,3,2,5,65,4,3,5,65,4,4
0C9D | 10868 data 5,65,3,5,999
57DC | 10870 rem scenario 3
3EBB | 10872 data 2,82,1,1,2,82,7,1,3,82,3,3
ED63 | 10874 data 3,82,5,3,1,82,2,5,1,82,6,5
7B19 | 10876 data 6,52,2,6,6,52,6,6,8,52,4,3
EB7F | 10878 data 7,52,3,2,7,52,5,2,6,52,4,0
EC50 | 10880 data 999
1794 | 10882 rem scenario 4
990A | 10884 data 2,64,4,9,1,63,9,7,1,64,9,7
909F | 10886 data 3,64,2,6,3,64,6,6,4,64,4,4
A8E0 | 10888 data 2,64,1,2,2,64,7,2,2,64,2,0
2C6E | 10890 data 2,64,6,0,1,54,4,8
32AD | 10892 data 6,44,4,4,6,44,3,3,6,44,5,3
5E47 | 10894 data 6,62,4,4,6,62,3,3,6,62,3,5
4C79 | 10896 data 6,66,3,4,6,66,4,3,6,66,4,5
5973 | 10898 data 5,84,4,3,5,84,6,3
96AB | 10900 data 9,94,4,4,8,94,2,5,8,94,6,5
49AC | 10902 data 999,1000
0B3D | 10950 rem-
20A2 | 10955 rem setup option ch's
DA6B | 10960 rem-
7602 | 10965 op=10:dimop$(op-1):forxi=0toop-1:r
       eadxt:op$(xi)=chr$(xt):next
D7F8 | 10970 data64,58,59,47,85,82,87,81,133,13
       4
F5BA | 10975 return
5813 | 11461 print:print"{RVS ON}"spc(7);:xn=sl
       %(sh,6):gosub11700
EA76 | 11462 print:print"{RVS ON}"spc(7);:xn=sl
       %(sh,7):gosub11700
C4FC | 11463 print:print"{RVS ON}"spc(7);:xn=sl
       %(sh,8):gosub11700
C1DE | 11465 print:print"{RVS ON}{CRSR DN}"spc(
       7);:xn=sl%(sh,1):gosub11700:xz=xn
3233 | 11525 poke1024+5*40+12+sl%(xi,3)*40+sl%(
       xi,2),sl%(xi,9)+193:next
257D | 11875 : forxj=0to9:sl%(xi-1,xj)=sl%(xi,x
       j):next
23EE | 20110 onxigoto20200,20300,20400,20500,20
       090,20090,20800,20600,20900,21400
6606 | 20715 xt=asc(xx$)-asc("A")
BADC | 20720 forxi=0tons-1:ifsl%(xi,9)=xtthensh
       =xi:goto20730
B88C | 20725 next:goto20075
0C5F | 20900 rem-
```

STARSHIP COMBAT *(cont.)*

```
EC09 | 20905 rem fire phasers
0C5F | 20910 rem-
D5D7 | 20915 xt=ty%(sl%(sh,0),4)
6C8C | 20920 rp=ph%(xt,0):rm=ph%(xt,1)
E3FE | 20925 dm=ph%(xt,2):tl=sl%(sh,8)
F19E | 21000 rem-
7B59 | 21005 rem check for enough mp
EA39 | 21010 rem-
47A9 | 21015 ifrm<=mpthen21100
ED38 | 21020 : gosub11300
9DBA | 21025 : print"Can't!"
6E31 | 21030 : printoa$"{2 CRSR DN}Weapon requi
       res"
0AC1 | 21035 : printoa$"{3 CRSR DN}"chr$(rm+48)
       " mp's to fire"
137C | 21040 : printoa$"{5 CRSR DN}(press a key
       )"
493C | 21045 : getxx$:ifxx$=""then21045
AD79 | 21050 : goto20000
55F3 | 21100 rem-
179C | 21105 rem find the target
4E54 | 21110 rem-
8328 | 21115 gosub11300
8BB5 | 21120 print"Select target:"
F667 | 21125 printoa$"{2 CRSR DN}(a-z)"
3D6D | 21130 printoa$"{4 CRSR DN}(_)Abort"
1A98 | 21135 getxx$:ifxx$=""then21135
5298 | 21140 ifxx$="_"then20000
EBC0 | 21145 ifxx$<"a"orxx$>"z"then21135
6FF0 | 21150 xt=asc(xx$)-asc("a")
66AA | 21155 forxi=0tons-1:ifsl%(xi,9)=xtthen21
       165
1130 | 21160 next:goto21135
BFEF | 21165 tg=xi:ifxz<>sl%(tg,1)then21135
87BE | 21170 iftg<nuthen21135
84A5 | 21200 rem-
2598 | 21205 rem inflict damage
84A5 | 21210 rem-
BE9C | 21225 gosub11300
5D48 | 21230 printty$(sl%(tg,0))" is"
230F | 21235 printoa$"{CRSR DN}hit for"dm
0FC6 | 21240 printoa$"{2 CRSR DN}points of"
86CB | 21245 printoa$"{3 CRSR DN}damage."
3462 | 21250 ss=sl%(tg,6):ifdm<=ssthensl%(tg,6)
       =ss-dm:goto21300
2026 | 21255 sl%(tg,6)=0:xt=sl%(tg,7)+ss-dm:ifx
       t<0thenxt=0
B8BB | 21260 sl%(tg,7)=xt:ifxt=0thenxk=tg:gosub
       11800
17F8 | 21300 rem-
12B9 | 21305 rem update tl mp pw
17F8 | 21310 rem-
0791 | 21315 sl%(sh,8)=tl:mp=mp-rm:pw=pw-rp
030A | 21320 goto20255
DD09 | 21400 rem-
88AB | 21405 rem fire torpedo
C6AE | 21410 rem-
CF7B | 21415 ifsl%(sh,8)>0then21455
928D | 21420 : gosub11300
887B | 21425 : print"Can't!"
CF58 | 21430 : printoa$"{2 CRSR DN}No torpedoes
       "
8B70 | 21435 : printoa$"{3 CRSR DN}are left"
DB31 | 21440 : printoa$"{5 CRSR DN}(press a key
       )"
2816 | 21445 : getxx$:ifxx$=""then21445
A0D6 | 21450 : goto20000
14E6 | 21455 xt=ty%(sl%(sh,0),5)
B8E6 | 21460 rp=tp%(xt,0):rm=tp%(xt,1)
BB2D | 21465 dm=tp%(xt,3):tl=sl%(sh,8)-1
E837 | 21470 goto21000
```


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ADVANCED TECHNIQUES

by Doug Cotton

Last issue we presented a program that ran in both 64 and 128 modes. Also, in case you didn't notice, there was an error in the listing presented in the right-hand column on page 44—the BASIC portion of our program. Line 10 in that program had a couple of BASIC 7.0 keywords that didn't get untokenized properly when we processed the listing for the magazine. Most of you who noticed the problem also probably noticed that the line was supposed to be the same as the line 10 shown in the left-hand column on that same page. Sorry for the error, and thanks go out to Ed Bell for pointing this problem out to us. Here, then, is the corrected program:

```
686B  10 PRINTCHR$(147):F=ABS(PEEK(65533)=255
      ):M=0:IFFTHENM=ABS(PEEK(215)>127):IFMTHE
      NFAST:WINDOW20,0,59,24
5E39  20 X=PEEK(43)+PEEK(44)*256:IFFTHENX=PEEK
      (45)+PEEK(46)*256
EF66  30 NL=PEEK(X)+PEEK(X+1)*256:IFNL<>0THENX
      =NL:GOTO30
0B7B  40 IFFTHEN50
FA4D  41 POKE175,INT((X+62)/256):POKE174,(X+62
      )-(PEEK(175)*256):POKE251,PEEK(45)
155F  42 POKE252,PEEK(46):POKE253,PEEK(45):POK
      E254,PEEK(46)+20:SYS(X+2)
C4B3  50 SYS(X+62+((1+-F)*5120))
```

I also mentioned in last month's column that the program would work well for starting a machine language program, but that it would need some further refinements to work with a mixed BASIC/ML program that would be jumping back into BASIC. Have you considered why it won't work correctly for that purpose? Well, let's look at what the program does for a moment.

First, the program checks to see what computer mode (64 or 128) it's running in and sets some variables accordingly. It then finds the end of the BASIC text by following the BASIC line links to the end of the program. It pokes this info into memory for use by the 'mover' machine code. Then it does a SYS to the mover, which moves the program up 5120 bytes if the program is running in 64 mode. Here is where the problem actually begins; you see, if you move the last portion of a loaded program upwards in memory, then you're placing code into memory reserved for BASIC variables. That means you're taking a chance of having variables overwrite your ML at some point. This doesn't happen to our small BASIC program, because we're moving far enough that the few variables which we've defined aren't going to conflict—in other words, we're doing something that isn't really right, but we can get away with it. But if you have a larger BASIC program that defines a lot of variables, eventually they'll bleed into the ML.

So what needs to be done? Well, the obvious thing to do is to check to see if you're running in 64 mode, and if so, raise the top of BASIC. With this, though, comes the realization that all variables will be lost in the process. So in addition to raising the top of BASIC, we also have to redefine any truly important variables.

Let's look at doing what we need to make this work. First, we can assume that line 50 of our program may no longer exist, at least not where it currently is. There would be several lines like it, though, throughout your program, if your program is a mixed BASIC/ML hybrid. So, while line 50 may not be important now, the variables used in it are bound to be important later on. So this means we'll have to somehow maintain or re-create those variables, which are X and F. Now F is pretty simple to preserve, since we know what it is on a 64 or in 64 mode, and our new code for raising the start of variables will only be executed if the machine is in 64 mode. The variable M, defined early on, might also be needed by your program, but again, we know it's value for 64 mode. So X is really the only one that presents any problems at all.

We can take one of two approaches in regaining X... we can either store it in a safe place temporarily, or we can recalculate it. The latter has some drawbacks, since it is more time-consuming, and there are some changes going on that could affect the results which must be taken into account. So it seems that the easy way out would be to simply store it away for later recall. Since this code will operate only if in 64 mode, we can tack this in between the present lines 42 and 50. Let's start coding:

```
POKE253,INT(X/256):POKE252,X-(PEEK(253)*256)
```

Now which locations do we have to change to move BASIC variable storage up? Locations 45-46 (decimal) hold the start of BASIC variables, so these must change. Actually, since we'll be making an even page move, we need only change the high byte in location 46. We have to add 20 to that. We'll also have to move the contents of 45-46 into 47-48 and 49-50, the starting and ending pointers for BASIC arrays by performing a CLR. Here we go:

```
POKE46,PEEK(46)+20:CLR
```

That was easy enough, eh? Then we finish with:

```
F=0:M=0:X=PEEK(252)+PEEK(253)*256
```

And that pretty much covers it. So we can add this line to our program:

```
26F3  43 POKE253,INT(X/256):POKE252,X-(PEE
      K(253)*256):POKE45,PEEK(46)+20:CLR:F
      =0:M=0:X=PEEK(252)+PEEK(253)*256
```

Load your copy of the program and re-save it with this new line. This will now work for any mix of BASIC and ML. Of course, if you came up with a better solution while you were waiting for this issue to come out, send it in, and I'll be happy to share it with the rest of our readers.

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Peripheral Vision

By Doug Cotton

PART TWO IN OUR SERIES ON SCSI DEVICES AND COMMANDS

In the last issue of Commodore World, we gave a general overview of SCSI devices and commands, and discussed the parameters required by the CMD HD's "Send SCSI" command. In this installment, we'll wade in a little deeper, and look at using some specific SCSI commands with the CMD HD.

SCSI Read

You'll find two variations of the SCSI Read command in the list of SCSI commands in the last issue; a Group 0 command, and a Group 1 command. The Group 1 variation is known as the 'Extended Read' command; it can address larger storage devices than the Group 0 version. In our discussion here, we'll work exclusively with Group 1 Read and Write commands, since any hard drive used in a CMD HD must support these.

We've reprinted the general Group 1 Command Descriptor Block (CDB) in this issue. You'll soon learn that all commands follow the general CDB for their command group, though some commands may use certain of the command parameter fields differently.

Let's assume, for example's sake, that we want to read the second lowest SCSI block from the main system drive in a CMD HD. We can use this task to illustrate how to read a SCSI block with the CMD HD's DOS SCSI command.

Before we can start tossing SCSI commands at the HD, we have to open a command channel in order to 'talk' to the drive. This is done in the same manner as it would be with any Commodore type disk drive:

```
OPEN15,12,15
```

I'm assuming here, of course, that you have an HD attached as device 12 on your computer. If the device number is different, then substitute the actual device number for the 12 in this command.

The next step would be to send the DOS SCSI command to the drive. This is done with a PRINT# statement, but before we do this, we need to figure out all of the parameters that will go into this command. Let's look at the DOS SCSI command syntax:

```
PRINT#lf,"S-C"CHR$(de)CHR$(bl)
CHR$(bh)CHR$(cb)...
```

We already know that *lf* is 15, since that's our command channel. So the next thing we need to know is *de*, which is the SCSI device number. Since we're reading a block from the main drive in the CMD HD, and since the main drive must be SCSI device 0, we know that *de* equals 0.

The next two values we need are interrelated. These are, respectively, the low and high bytes of the drive memory we want to use as a buffer for SCSI device data. This buffer is where the block of data we're going to read from the drive will be placed. Once it's in the buffer, we can access it by doing a Memory-Read of the drive's memory. But more on that later. For now, we just need to find some free memory in the drive capable of holding at least 512 bytes, which is the size of the SCSI blocks used on the CMD HD.

The HD has 8K of free RAM available for purposes like this, starting at $3000. This gives us a low address byte of $00 (decimal 0), and a high address byte of $30 (decimal 48). So now we know that *bl* equals 0, and *bh* equals 48.

Now we move into the command bytes needed for the actual SCSI command, per the Extended Read CDB. The first byte of the CDB is the SCSI command byte. The Read Extended command is $25 (37 decimal), as shown in last issue's command table, so the first value we need is 37.

The next CDB byte is a combination of the Logical Unit Number (LUN), some reserved bits, and the Relative Addressing (RA) bit. The LUN on a hard drive mechanism containing only a single logical unit will, for all practical purposes, always be zero. Reserved bits must always be zeroes, as well. And we don't want Relative Addressing, so the RA bit is zero. Put all those zero bits into a byte, and you've got a byte value of $0 (decimal 0). So the second value we'll need to send is 0.

Now we move into four bytes that make up the Logical Block Address (LBA). This is the block number we want to read. The SCSI address of this block is $00000001. Yes, that's a lot of zeroes, but if we want to work with the full addressing available with extended SCSI commands, that's how many it takes—8 hexadecimal digits. This is an easy one, though, since most of the digits are zeroes; but you'll have to make sure you break the address bytes up in the correct order to get the correct data from the drive.

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The first LBA byte we need to send is the Most Significant Byte (MSB), and the last one we need to send is the Least Significant Byte (LSB); so this means we work through the address from left to right. Drawing on our vast knowledge of numbering systems, we know that two hexadecimal digits are equal to a single byte, so we take two digits at a time to create our four bytes of LBA values: $00, $00, $00 and $01. In decimal, 0,0,0 and 1.

The next CDB byte is reserved, so it's an easy one: 0. Remember, all reserved bits should be zero.

Now we come to two CDB bytes that make up the transfer length. The Extended Read command uses these bytes to determine how many contiguous blocks you want to read from the device, starting at the block indicated in the LBA bytes. We only want to read one block, so the transfer length is $0001. Again, the MSB is indicated as the first of the two bytes, so we read the values from left to right, using two hexadecimal digits per byte. This gives us an MSB of $00 (decimal 0), and an LSB of $01 (decimal 1). So our next two values are 0 and 1.

The last CDB byte is the Control Byte, and is made up of six reserved bits, the Flag bit, and the Link bit. We won't be getting into using linked commands, so all of these bits are zeroes, giving us a final value of 0.

And that's it! So all we need to do now is string (if you'll excuse the pun) these all together into the PRINT# statement:

```
PRINT#15,"S-C"CHR$(0)CHR$(0)CHR$(48)CHR$(37)CH
R$(0)CHR$(0)CHR$(0)CHR$(0)CHR$(1)CHR$(0)CHR$(0
)CHR$(1)CHR$(0)
```

On a 64, you'll find this string is too long to fit on two lines, so you'll need to build it up in a variable or two. I'd take this approach: build the actual "S-C" portion of the command along with the SCSI device number and buffer location bytes into one string. Place the actual CDB data into a second string. This way, you can vary the SCSI CDB command string as you send different commands.

Once the command has been sent, we'll find the data from the requested SCSI block in the buffer we defined at $3000 in the drive memory. This can be examined using the DOS Memory-Read command. If you're not familiar with using that command, there are examples in the CMD HD User's Manual. We'll also explore using this command along with some of the other things we've learned in the next installment of this column.

Doin' the Write Thing

If you've managed to follow the information on using the Extended Read command well enough to understand it, then you already know everything you need to use the Extended Write command. Remember, the commands all follow the same general CDB formats. The only things different about using the Extended Write command are the command byte itself, and making sure your buffer contains the data you want written to the drive before you issue the command. Data can be placed in the buffer using the DOS Memory-Write command. If we wanted to write the block we read in our example back to the same location on the drive, we would send:

```
PRINT#15,"S-C"CHR$(0)CHR$(0)CHR$(48)CHR$(42)CH
R$(0)CHR$(0)CHR$(0)CHR$(0)CHR$(1)CHR$(0)CHR$(0
)CHR$(1)CHR$(0)
```

Next issue we'll look at a couple more commonly used commands, and put together a small program to copy SCSI blocks. We'll also discuss how to handle errors—just in case!

BYTE \ BIT	7	6	5	4	3	2	1	0
0	Operation Code							
1	LUN			Reserved				RA
2	Logical Block Address (if required) (MSB)							
3	Logical Block Address (if required)							
4	Logical Block Address (if required)							
5	Logical Block Address (if required) (LSB)							
6	Reserved							
7	Transfer Length (if required) (MSB)							
8	Transfer Length (if required) (LSB)							
9	Control Byte							

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How to Type In Program Listings Appearing in Commodore World

While *Commodore World* currently doesn't make it a habit of publishing type-in programs, a number of our columns do require entering sample routines. For this purpose, we have created our CHK-LIST utility for the Commodore 64 and 128. This utility uses a 16-bit CRC checksum method to verify that you have correctly entered each program line, and that each of the characters in the program lines are in the correct order.

You'll notice that program listings appear with a column of values to the left of the program lines. These values are the CHK-LIST values and are not to be entered as part of the program. A similar set of values are generated by the CHK-LIST utility to allow you to verify that everything has been entered correctly.

Enter the CHK-LIST program from BASIC. You can use either a C-64 or a C-128 computer. If you use a C-128, it can be in either 64 or 128 mode. Be sure to enter each line carefully to avoid mistakes—until you actually have CHK-LIST working, finding errors in program entry won't be easy. After you have finished entering the program, be sure to SAVE a copy to disk before you attempt to RUN it, just in case. If you aren't familiar with how to save a program to disk, you can use the following command:

```
SAVE"CHK-LIST",8
```

To use CHK-LIST, load it into your computer and type RUN. Make sure that any program you are currently working on is saved first, or start CHK-LIST before you begin typing in a new program. After you have CHK-LIST in memory and running, type NEW. You may now either load or begin typing the program you wish to have CHK-LIST check on. Whenever you want to check your program, type in the appropriate SYS command given below:

C-64 or C-128 in 64 mode:	`SYS49152`
C-128 in 128 mode:	`SYS4864`

Note that when typing in listings, some special characters will appear in braces. For example, {CLR/HOME} means that you should enter the Clear key, which is done by holding down the SHIFT key while you press the HOME key. Other times you may see a number ahead of the key name, such as {3 SPACES} or {5 CRSR L}. This means you should press the key indicated the number of times shown. Most special keys are easy to identify, since the text shown will generally match the text on the key. Exceptions are the space bar {SPACE}, and cursor keys which include directions ({CRSR UP}, {CRSR DN}, {CRSR L} and {CRSR RT}). Be sure to use the correct key combinations for color keys, such as <CTRL><2> for {WHT}.

CHK-LIST

```
A454 10 F=ABS(PEEK(65533)=255):M=49152:IFFTHE
     NM=4864
6E2F 12 C=0:PRINT"{CLR/HOME}WORKING";
E350 20 READD:IFD=-256THEN40
AD20 30 C=C+D:IFD<0ANDF=0THEN20
3316 31 IFD<0THEND=0-D:M=M-1
07F0 32 POKEM,D:M=M+1:PRINT".";:GOTO20
578A 40 PRINT:READCK:IFC<>CKTHENPRINT"ERROR I
     N DATA STATEMENTS!":END
0679 50 PRINT"DONE.":END
8D92 60 :
E7FE 49152 DATA 165,43,-45,133,251,165,44,-46
     ,133,252
B2AE 49160 DATA 169,0,141,36,193,-20,169,147,
     32
CD50 49168 DATA 210,255,32,194,192,-19,160,0,
     140
C9CD 49176 DATA 37,193,-20,177,251,133,253,20
     8,3
2058 49184 DATA 238,37,193,-20,200,177,251,13
     3,254
EA9C 49192 DATA 208,3,238,37,193,-20,173,37,1
     93,-20
6C15 49200 DATA 201,2,208,1,96,200,177,251
E70E 49208 DATA 170,200,177,251,32,205,-50,18
     9,-142,169
6795 49216 DATA 6,133,211,-236,169,61,32,210,
     255
F80F 49224 DATA 169,32,32,210,255,160,2,177
9735 49232 DATA 251,32,213,192,-19,200,177,25
     1,32
0734 49240 DATA 213,192,-19,200,177,251,240,6
     ,32
D99D 49248 DATA 213,192,-19,76,90,192,-19,173
     ,191,192,-19
AC30 49256 DATA 32,167,192,-19,173,190,192,-1
     9,32,167
```

CHK-LIST *(cont.)*

```
B343 49264 DATA 192,-19,169,13,32,210,255,165
     ,253
DF3A 49272 DATA 133,251,165,254,133,252,238,3
     6
A6E2 49280 DATA 193,-20,173,36,193,-20,201,20
     ,240,3
936E 49288 DATA 76,18,192,-19,162,0,189,1,193
     ,-20
8C3A 49296 DATA 240,6,32,210,255,232,208,245,
     32
EB74 49304 DATA 228,255,201,13,208,249,32
6095 49312 DATA 228,255,208,251,76,8,192,-19,
     72
A001 49320 DATA 106,106,106,106,32,180,192,-1
     9,104
FAA2 49328 DATA 32,180,192,-19,96,41,15,170,1
     89
EBFD 49336 DATA 20,193,-20,32,210,255,96,0,0
E907 49344 DATA 0,0,169,0,141,190,192,-19,141
E8EA 49352 DATA 191,192,-19,169,33,141,192,19
     2,-19,169
A7D7 49360 DATA 16,141,193,192,-19,96,162,8,7
     2
6040 49368 DATA 41,127,77,191,192,-19,141,191
     ,192,-19
D24B 49376 DATA 24,14,190,192,-19,46,191,192,
     -19,144
D52F 49384 DATA 18,173,192,192,-19,77,190,192
     ,-19,141
DCA6 49392 DATA 190,192,-19,173,193,192,-19,7
     7,191,192,-19
6032 49400 DATA 141,191,192,-19,104,10,202,20
     8,215
37C5 49408 DATA 96,13,80,82,69,83,83,32
9A2A 49416 DATA 60,82,69,84,85,82,78,62
AC90 49424 DATA 13,13,13,0,48,49,50,51
FE71 49432 DATA 52,53,54,55,56,57,65,66
017E 49440 DATA 67,68,69,70,0,0,-256,37944
```


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Carrier Detect

By Les Songa

THE PHOENIX NETWORK: AN ALTERNATIVE TO LARGE ON-LINE SERVICES

As an experienced modemer, I've long forgotten that "new user" feeling, the good kind of new user feeling, where each time you log onto the system, you feel there are new and exciting places to explore, as well as new friends to meet. This new user feeling seldom returns to me unless I happen to try out a new on-line system that seems somehow different from the rest and has something unique to offer. One of the nice things about being a new user, whether a seasoned veteran or truly new to the world of modems, on-line services and the like, is when one finds a unique service that makes them immediately feel at "home". *The Phoenix Network* is one such place.

What is The Phoenix Network?

Phoenix is run by Kat Tate, who hosted Trivia games on both Q-Link and AOL, and Glen Doty, a Co-Host on AOL. They joined forces in Flagstaff, Arizona and created *The Phoenix Network*, which went on-line on October 1, 1993, after five months of planning and development. Tate and Doty developed a couple of different philosophies and goals, which have gone far in making Phoenix one of the friendliest of on-line services. One of the goals was to create a friendly alternative to larger services that don't offer a high level of personal service. They have a policy of providing users with support and information for their specific computer, making it an ideal place for Commodore users. Phoenix has approximately 250 users, of which about 158 are Commodore users.

The Phoenix Network utilizes SprintNet for system access. This lets users call a phone number in their own area to connect to SprintNet, which, after the user types a few commands, will connect them to the on-line service. The network is run on Major BBS software, manufactured by Galacticomm, Inc., which allows multiple users to be on-line simultaneously using a single computer to run the entire show. Users may call using modem speeds from 300 through 2400 baud without incurring any extra charges above the $4.50 per hour fee, while 9600 baud callers are charged $2.00 more per hour as SprintNet charges extra for this and Phoenix must pass on the expense to the user. Doty recommended 9600 baud be reserved for file transfers while using 2400 baud to access the forum and chat areas. Phoenix accepts both Visa and MasterCard for payment, but also allows users to make other payment arrangements if necessary. The cost has gone down to $4.50 per hour from $5.00 when it first went on-line. Doty commented that as the number of users increases, the cost will continue to decrease.

Q-Link refugees, with little experience on other systems should feel right at home on Phoenix. Many of the same familiar people from Q-Link frequent this service, and Phoenix has 24 hour help available on-line, and off-line, with a toll free voice phone number. The initial screens that are seen at log-on are pre-set to 40 columns. These screens change to 80 columns for those who have selected the regular ANSI style menus, but an option is available to have all menus and screens displayed in 40 columns to help accommodate Commodore 64 users. Staffers have taken extra steps to ensure that Commodore users feel at home, to the extent of mailing C64 customers Novaterm 9.5 to use, as many of their new users are fresh from Q-Link, and have only used Q-Link's terminal program. This can be a big jump for many, and the personal service from Phoenix staffers has probably helped many a new user feel comfortable about asking questions and learning their way around on a service that isn't graphically orientated.

The Phoenix staff has a very high regard for privacy, but very closely monitors first time callers on the system so they can spot those who need extra help. When it appears a new user is having a problem, Phoenix's staff will often send the new user a message on-line (which can be seen immediately), to offer guidance. Often they call new users back (part of the initial sign-on process involves giving your home phone number) to offer further assistance.

Serious, Fun and Friendly

It's very hard to find an on-line system that can set a balance between fun and the sharing of information. The Phoenix Network manages to reach a balance between fun in the form of several live trivia games scheduled nightly, plus other on-line games, and serious information sharing via forum areas as well as offering free Internet access and Usenet Newsgroups, including COMP.SYS.CBM.

There are over 100 forum areas on Phoenix, including a well attended Star Trek forum. The Commodore Forum area provides Commodore users with support via both messages and file libraries. The Commodore message forums are fairly active and a good representation of everyday C64/128 users make this a nice area for those

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who don't wish to be too technical. For technical conversations, the COMP.SYS.CBM newsgroup is also available, so a nice blend of both are available on the same system. I was told that the Commodore specific Usenet Newsgroup, COMP.SYS.CBM, was not yet available, but somehow I got lucky because this arrived on the system the same day I logged onto it for the first time.

For those who prefer to download their mail and read it off-line, Phoenix has a QWK-Mail menu which works with either QWKRR128 or the Commodore 64 QWKie off-line mail readers. I was a little surprised that the QWK packet is zipped, but not compressed. This could be expensive if downloading a great deal of mail. Commodore 64 users will need to use UNZIP64 and QWKIE3.1 to dissolve and read the PHOENIX.QWK mail packet; C-128 users can use UNZIP128 (or QPE, a utility program found in NZP12813.SFX) to unzip the packet, and load QWKRR128 to read it (QPE loads QWKRR128 automatically). These files can be found in the Commodore 64 or 128 file areas on Phoenix.

There are approximately 1000 Commodore files on-line with more to come as the system grows. While users are not charged for the time spent in uploading files, all files are tested before becoming available, and most are made "live" within 48 hours after uploading. The selections are divided between C64 and C128, and each has a variety of different file areas including graphics, games, applications, utilities, telecommunication files, and last, but not least, SIDS. When it became apparent that the file libraries on Q-Link would not be repaired, the musically inclined "SIDsters" on Q-Link gravitated to The Phoenix Network. The SID library on Phoenix is impressive and active with new SID files to download. The SIDsters have a weekly gathering on Phoenix, and their own message forum. It's refreshing to find new SID music after such a long dry spell.

Phoenix is big on fun and games. Nightly live trivia games are scheduled and announced on the opening screens. The trivia games are played in the chat areas, which can be quite a bit of fun with the regulars who show up to play. The games are 90 minutes long, with the winners receiving 90 minutes of free access to the system. One person hosts the trivia game asking the questions and keeping track of the time (there is a time limit for answering the questions), and another person keeps track of the score. Half way through the game, the scorekeeper lists the number of points each user has accumulated, and there is a short break before the game resumes.

Another game played in chat mode is Tingo, an on-line version of Bingo which is very similar to the games played in Bingo halls, except that the computer generates and keeps track of the bingo cards, as well as calling the numbers. Users can type a command to view their card to see how well they're doing while chatting with the others on-line. Users "ante in" 5 minutes of time, with whoever Bingo's getting the ante of time as their winnings. Other on-line games include Tradewars 2002, which is an interactive PC game that Commodore 64 users can also play, Crosswords (scrabble), Crossroads of the Elements, Global Destruction Chess, Backgammon, Othello, Tic-Tac-Toe, Super Nova, and several more. There's also a hints and frequently asked questions forum in the games area to handle questions that come up often about the games. Many of the games are interactive but are not the same as the Trivia games which are "live action" games. I.E., you are playing against other users at different times, and scores are kept by the system; it isn't necessary for the players to be on the system all at the same time.

Other fun can be found in the message forums, which include Mystery Dates where one user is picked to go on a mystery date while other users offer humorous suggestions for who the date should be, to where they should go on their date. In a way, this is similar to mad-libs. The Cockroach Cafe is another creative message forum on Phoenix, which is game and fun and very weird all at the same time.

An on-line flowershop allows users to spend 25 cents and send other users on-line flowers and other ANSI graphics as greetings. In the chat areas, "Action Words" can be used to send silly messages to others in the area. More than a couple dozen words are available and creative users are encouraged to submit them to the operators to add to the list of words. Some are tame such as "clap" to add applause when playing games, or silly such as "tickle username". Shown to those in chat mode is text something like "Les Songa is tickling So-and-So half to death."

Phoenix offers both Adult and Family areas, which are kept completely separated. When users log on for the first time, they are asked about whether or not they wish access the Adult Area. If they don't want access to it, users never see any of the menu selections for the adult side of the service. Access to the Adult Area is withheld until the user's age is verified with photo identification and a signed letter requesting admittance to the area which can be faxed or mailed to the service. The adult side includes forum, chat, file and game areas.

It's inevitable on any on-line service that an occasional user will annoy other users, break the rules, or in some way cause problems. The Phoenix Network has a unique way of dealing with these users in a friendly manner. The user is simply put in a solitary confinement jail cell. A little jail cell is drawn on the screen, and the user cannot go about their normal activity until one of three things happen. They can log off, and then log back on (but that's no fun), they can be pardoned by the Sysop, or they can escape through a tunnel where they will find themselves in the dungeon or maintenance area of the system (no, not the REAL maintenance area, but an imaginary one that resembles the basement of a large building with

Hooking Up With Phoenix

If you've never used SprintNet to access other on-line services with a local telephone number, you will need to dial (voice) 1-800-869-1155 and ask about a SprintNet number near you. If you already know your local SprintNet number, set your modem for 8N1 (8 data bits, No parity, 1 stop bit) and dial your local access number.

For modem speeds of 300-1200 baud, when you see CONNECT on your terminal screen, type:

`D` (*uppercase "D"*) `<RETURN>`

For modem speed of 2400 or 9600 baud, when you see CONNECT on your screen, type:

`@D` (*uppercase "D"*) `<RETURN>`

When you see "Terminal =" on the screen, type:

`D1 <RETURN>`

When you see "@" on your screen, type:

`C FYREBIRD`

Once this is done, you will be connected to The Phoenix Network. You will still need to answer several questions to set up your account. You will need your credit card handy, as once you have followed all the prompts and answered the questions concerning your account, you will not be allowed access to the actual system until you've taken care of how you will be billed. You are given an option to page the system operators, so if you need to make other billing arrangements this can be done easily and promptly.

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pipes and wires and such). The only way out of this entrapment is by searching for and finding a key to use to get out.

Looking Ahead

Phoenix has plans to supply Commodore users with a terminal program designed to automate the SprintNet log-on procedure. Other plans for the near future include satellite service via Planet Connect, which will allow Phoenix to add Fidonet and other networks to their system, and possibly Cybernet, which would allow European and Canadian callers to access the system.

The Phoenix Network offers new users very complete support. It offers far more in the way of service, support, new files, and friendliness than Q-Link has offered users in many years. This seems to be an excellent stepping ground for Q-Link refugees who have never experienced other on-line services, and it offers much for the experienced modemer, too. Many of the other larger services offer Commodore support, but Phoenix goes that extra mile in ensuring that Commodore users are welcomed and feel comfortable. In this day and age of mega on-line services that offer everything from soup to nuts without much in the way of friendliness or personal service, it's nice to find a system such as The Phoenix Network, which offers many of the same features as the larger services, yet has the heart and soul of a friendly neighborhood bulletin board.

Phoenix For the First Time

Here's a brief rundown of what first time users can expect on their first time call to Phoenix:

You will be asked your name - not your intended "user name", but your legal name for billing purposes. You will also be asked for your address and birthdate.

In an effort to support the C64 users, all of the initial log-on menus and text default to 40 columns until you specify otherwise. There are several 'terminal type' choices available; these include English/ANSI, English/64, and English/Rip. If using Novaterm, C64 users can if they wish select the English/ANSI option, or they can use the English/C64 option which will display all text and menus in 40 column ANSI instead. Once on-line with billing taken care of, the user can change the settings and if they wish, turn ANSI graphics off so they have simply ASCII text.

Ironically, due to the software used by The Phoenix Network, the next question is a little annoying for Commodore users, but don't blame Phoenix for it—it's a limitation of the software, not an oversight of the on-line service. You are prompted with a list of 9 computer types, and a tenth "none of the above" for which kind of computer you use. Commodore users need to select the last option, for "none of the above". When I asked Chief Engineer Glen Doty about this, he apologized and explained that this question and its responses were built into the software. He does plan to change this in the future, but to do so he must first learn to program in the language that MAJOR BBS software uses, as it involves rewriting a section of the program used to run The Phoenix Network.

The next question is an important one, as it concerns whether or not you wish to have access to the Adult area on the Network. If you don't wish access to this area, you will never see any of the menu prompts for the Adult area. Those who do wish access to this area are not given access until they have mailed or faxed one form of photo identification and a signed letter asking for Adult Area admittance.

Once you've made it to this point, The Phoenix Network asks about what name you wish to be called on the service. This can be from 3 to 21 characters, and capitalized as you wish. The system will display how your chosen user-id will look in use, and you are given the opportunity to change it. This is the only time you can change this id, so if you want to change it at a later date, you'll have to open another account. If you do happen to have multiple accounts, you can opt to have your mail forwarded to someone else (presumably your other user-id name) so you won't miss any Email.

You are then prompted to enter your password. Each time you call Phoenix, you will be asked for both your user-id and password before being given access to the system. You are asked twice for the password, to be certain that the password is correct. You are then reminded to write this information down and are given a prompt to press return after you've done so. You can always change your password at a later date, but to do so, you must know your old one to get on-line first before changing it.

Once this process is complete, you are told you have mail waiting for you. New users are automatically sent a welcoming note which explains a little about how to use the system. Attached to this message is a text file, PHXUSER.DOC, which contains detailed information about how to use the entire system. C64/128 users are told not to download this file as it's "incompatible" with our systems and to request the C64/128 version. However, the only incompatibility this file has is that it's in true ASCII format, not PETASCII. If your terminal program allows you to translate the ASCII file formats, this is not a problem. The only other "problem" with this file is that it's long. Experienced users who have a sequential file viewer or printer should have no problems with the original PHXUSER.DOC file. Inexperienced users can leave a note and later download the translated file if they wish. It is nice to have the option available.

When this message is first read, its possible that you may not be able to download the attached file, as the mail menu doesn't allow you to set a file transfer protocol. You can "Tag" the file, and before logged off you are given the opportunity to download it and can at that time select a protocol for file transfers. It's important to note that you are not given the opportunity to choose a protocol unless you get fully on-line by answering the billing information.

Once you've read the new user mail, the system gives you three choices. You can go to Billing and take care of how you will pay for your account, you can find out who's on line, or you can log off. Once in the Billing area, you can page the sysop and make other billing arrangements if for whatever reason you don't wish to pay by credit card. One thing to note too, is that you will be asked if you wish to purchase time on the system in advance. You don't have to pay for time on-line in advance, but it's nice to have the option available.

- L.S.

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BBS NETWORKING SPOTLIGHT

DS2 NETWORK

AN OVERVIEW OF THE NETWORKING AVAILABLE FOR C-NET 64 DS-2

by Michael Bendure

DS2 Network is a BBS Networking program designed for C-Net Developers System-2 versions 2.0 and 2.5, and was originally designed by Gary O'Brien back in 1989. Gary further developed the program to operate on v2.5 and planned on having it be part of the upcoming C-Net DS-2 v3.0. Gary was responsible for writing and developing DS2 Network from version 1.0 up through version 3.03, and was also responsible for the current 14-page Programmers Manual that comes with the registered version. Version 3.0 of DS2 Network marked the third networking concept used and so far the most efficient. It uses a *pathed networking* concept by which messages are sent according to the BBS that your system calls. The "path" would be the route the message takes to get to its destination.

When Gary's hard drive finally gave up operation in late 1992, the "Master Node" was given to a BBS operator in Tennessee, who later upgraded to another platform. This left me as one of the original Beta testers, and the only programmer willing to attempt future development of DS2 Network. In mid 1993, Gary signed over all rights to further development and support of DS2 Network to me.

I spent the first 9 months going line by line through the programming, looking for possible typos or illegal procedures. While doing so, I found several undocumented features, and went to work fixing the current bugs and finishing some of the not yet completed updates. I created the 40/80 column color Menus, the NetMaps and the Maintenance routines for the NetMatchmaker. I also fixed the File Request routines that were originally used for updating Network PRG files so we could send any PRG or SEQ file through the network. My last addition was to create two versions, one for registered and one for unregistered SysOps. I then released DS2 Network v3.04. I'm currently working on updating the Programmer Guide, and networking compatibility with other systems.

Operation

The Network is fully Automated, in that your BBS will Call Out to your Home Node, transfer both batch files (incoming and outgoing) as well as any PRG or Update files, process the information to your BBS and any other BBS that uses you as a Home Node and delete old messages in the Net Message Bases, NetWall and NetClassifieds (in accordance with the number of days you have configured each of these areas for). This all occurs automatically on every BBS if you set your system up to run automatically. Of course you can run it manually as well, meaning that you would invoke the Call Out process by issuing a single keystroke while the system is waiting for a call. The rest of the process would be automatic, unless you choose not to run the Auto-Maintenance, in this case you can also run the Auto-Maintenance manually as well.

The Call Out process is done according to how the system is configured. You can configure the system to call out automatically or manually. If it's configured to run automatically, then you choose what days of the week your system calls out to your Home Node. The system does a check, to see if it's your configured day to call out, if you have any messages to send, and to see if you have already called out that day. If everything checks out, then your system attempts to connect with your Home Node. It will dial out 5 times or until it connects. If it doesn't connect, it will try again an hour later. If it does connect, the Remote Node sends the Home Node info on his/her BBS. The Home Node confirms this info and awaits the first transfer. The Remote Node then sends the batch file intended for the Home Node. Once received, the Home Node then sends the batch file they have for the Remote Node. If any PRG files exist for the Remote Node and the Remote Node is registered, then the Home Node will send those using a Multi-Transfer. After sending and receiving all the files, your system then hangs up and begins the sort process. Manual call out works in the same way, except the Sysop initiates the call out manually.

The sort process always takes place after the call out is completed, assuming there is a file to sort. The sort takes the one batch file and distributes all the different messages to their proper place according to what areas you have available. The batch file you receive is constructed for your system according to the areas you have configured to receive. You won't receive messages that you don't have an area for. For example, if you have your NetWall turned Off, you will not receive Messages for the NetWall until you turn it back on. The same goes for all the Subs and other areas. Once the sorting is complete and the logs are updated, the batch file is renamed to n.files. At this point, the Filer takes over if you're a Home Node as well; if not, the file is simply deleted.

If the Remote Node is also a Home Node to other BBS's, the Filing process takes the n.files batch file and Files it to the other BBS's that call his/her system according to the areas they have configured to receive on their system. This is where the batch files are constructed to suit each system. The Home Node searches the REL files on his/her system that pertain the Remote Node that the batch file is being sorted to. If that system is configured to receive messages for the area the message is intended for, then that message is saved or appended to that Remote Nodes batch file. If the Remote Node isn't configured to receive messages for that area, then that message is skipped and the Filer goes on to the next message. This continues until all the messages are filed to all the Remote Nodes batch files. Once this is completed the system then deletes the n.files file and awaits another call.

Local activity, activity on your system locally, is done in a similar manner. Once all your network areas are set-up and folks start posting messages in any of the network areas on your system, the message is saved to the file n.files, except with NetMail. When sending or replying to NetMail, the message goes directly to the batch file for that system. If the receiving BBS calls a different BBS, then the message is sent to the Home Node of the receiving BBS. This is where the "pathed" concept came about. No matter where in the network a system is, the network will determine the path the message will follow based on who the Home Node of that BBS is. All other messages being in the n.files batch file, will be filed to every BBS's batch file that's above or below your system, if those systems are configured to receive messages

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in the same areas. In the case of messages going to your Home Node, messages in all areas are set regardless of the Home Nodes configuration. This will allow BBS's on different ends of the network, using different Home Nodes, to share the same areas, despite what the Home Nodes are carrying. If your node is a Home Node, you're responsible for messages coming to your system as well as those going to your Remote Nodes.

Registration

DS2 Network has been Shareware since version 3.0. Gary's releases were done without documentation. In order to even setup the Network, you have to have the DOCS. Without the correct additions to certain existing C-Net files, DS2 Network would not work. In order to get the DOCS, you had to send $15.00 to Gary. Although a little harsh, that's the way it was done. I decided to give folks a preview of sorts by giving them DOCS to install the network, but disabling all the features like File Request, 40/80 column menus, and the NetMaps. This is why I released two versions of the same software. Of course, when you register, you receive the Programmer Guide, the latest release of the program, and free updates and support sent through the network to your system. To register DS2 Network, simply send $15.00 in US Funds to:

Michael Bendure
92 Lee Ave Apt. N3
Newark, OH 43055

Configuration

Configuring DS2 Network is a little involved, but the DOCS that come with it will explain the process and I will also be available to help you through any difficulties you come across. It basically consists of copying all the files to their proper location, modding four existing C-Net PRG files (known as DSP files), selecting a Library of Subs for your Message Base and configuring the Network according to your space and/or budget limitations. You can also configure the Auto-Maintenance to run by itself.

This area is where you choose your Home Node (The BBS you will call to send and receive messages to and from), the days you want your BBS to call out to your Home Node, the areas you decide to receive message in, the drives the network will use, access levels for using the network options, info on your BBS and modem setup. There is also a separate configuration for Auto-Maintenance where you can choose the cut-off date for deleting old, inactive messages in the message base, NetClassifieds and NetWall. You can configure each area separately and choose which subs survive the deleting of messages and which ones do not. Auto-maintenance can be set to run manually or automatically.

Message Base

DS2 Network uses C-Net's original Message Base file with the Net Routines appended to the end of the PRG file. This not only makes things more compatible, but also makes installation much easier. The Network currently uses one Library of Subs for the Network. You can create a separate Library for the Network opening up 20 possible combinations of Networked Subs. Or you can combine local Subs with the Network by using an existing Library that already contains local Sub Boards. The Network uses the first three characters of the Name of a Sub Board to determine whether it's a Networked Sub or not. If the first three characters of your Sub is the same as someone else's in the network, then you can share messages in that area. Of course you also have to toggle that sub ON in the NetConfigure area. You will only receive messages for the areas you turn on in the configure area, as long as they match someone else's. There are over 20 Subs to choose from, ranging from teen topics to adult only discussions.

Netmail

As with most networks, DS2 Network also has the ability to send private network mail (Netmail) to anyone on any of the other systems in the network. All you need to know is the handle (user name) of the person you want to send Netmail to and at least the first three characters of the name of the BBS they are on. If you know the whole name, that's even better, but NetMail will search the Node list and prompt you to confirm the BBS is the correct one. If it isn't, it will search for the next occurrence of the characters you entered. Once confirmed, the message will be filed to the batch file of the BBS named. If that BBS calls another system in the network, then the message gets filed to the batch file of that system instead. Netmail is also somewhat accessible through the regular Email system as well as through Local Mode; in that you can reply to any Netmail sent to you, but you can't just send Netmail to anyone from these areas—NetMail is used for that. NetMail is also routed through the NetCharges file, so anyone sending Netmail will be appended to the NetCharges file with the appropriate amount owed for that message. (See NetCharges)

NetClassifieds

The NetClassifieds is an area somewhat like the Classified Ads in a newspaper. There are nine (9) different areas of Interest: Computers, Drives, Modems, Printers, Music, Misc., Consenting Adults, Men Seeking Women, and Women Seeking Men. The first six (6) are where folks buy, sell or trade computer equipment, music or instruments, and other odds and ends. The last three are actually fun and "Head" games (forgive the pun) for the Adult Only users. This area, like all the network areas, is fully menu-driven and simple to use.

Upon entering the NetClassifieds, you're taken to the first menu which displays the nine (9) numbered entries and four (4) lettered commands. You can read new entries in any of nine (9) areas, read all entries in one of the areas, or add an entry to any of the areas available to you. When reading entries in one of the areas, you can go on to the next entry in that area, send Netmail to the person who made the entry, or abort back to the menu where you can select another entry or leave the NetClassifieds. SysOps also have a Maintenance option to delete old or unwanted entries. The Netclassifieds is also routed through the NetCharges file and applicable charges apply (if used).

NetMatchmaker

This area is rather self explanatory. When a user enters the NetMatchmaker file, they can Enter an application, search for specific users or search through the entire file for a match. The search can be done according to certain aspects of each entry.

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You can search for Females only, Females with Blue eyes, etc. When searching the file and a match is found, you can view their stats and/or send them Netmail. The Netmail will have the Subject of Matchmaker Mail if you receive Netmail in this fashion. Entering an application in the NetMatchmaker will prompt you to answer a bunch of questions relating to your physical appearance, as well as a few that describe your interests, likes and dislikes. This file will be appended to the local BBS as well as being sent throughout the Network to everyone who has the NetMatchmaker activated on their system. Only NetMail is routed through the NetCharges file, so entering an application does not incur charges.

NetWall

This is simply a Graffiti Wall that is Networked throughout DS2 Network. You can toggle this on or off just like the other Network areas. You have 25 lines to enter text graphics or whatever. The message can be made anonymous or using your Handle. It also displays the BBS Name and Location. Messages here are routed through the Netcharges so applicable charges do apply.

NetNodes

This is the base of the whole Network. From a user's standpoint, it's just a BBS list of all the Nodes in the Network. As far as the Network is concerned, it's used to map the "path" the messages will take to get to their destination. The Net Nodes contains the BBS Name, Home Node, Location, Phone Number, Sysop Name and last call date of each BBS in the Network. The user can view any combination of the info stored in this file, alphabetically. The Node List is updated each time a BBS calls its Home Node.

NetCharges

This area keeps a record of each user on your system that uses the Net Options or NetMail. The user is charged a predefined amount for each block that is used, when entering a Net Message. The Message Base and NetMatchmaker entries are free. All other areas are routed through this system. The Sysop decides whether or not to charge for Net Access. Regardless of whether you use this area or not, the system still keeps the records current. You can either remove this entry from the Net Menu, or simply state to your users that the area isn't used.

NetStats

This file is updated with each connection. It keeps a record on a month-to-month basis, which contains the total of each type of Net Message that is written to your BBS. This file keeps the current total and percentage of Posts, Responses, NetClassifieds, NetWall, NetMail and NetMatchmaker entries coming into your system for each month.

NetMaps

This is a little mod I put together to view the three Net Maps I wrote. The Graphical Map shows a picture of the US and Canada with all the BBS's in their proper location. The Functional Map shows simply who connects to who in color or ASCII formats. This feature not available in Unregistered versions.

NetLogs

There are four separate log files for the Network: The Activity Log, Call In Log, Call Out Log and Transfer Log. The activity log keeps track of all NetMail, Messages Sorted to your system and the Auto-Maintenance logs. The Call In Logs tells the time and date of connection and disconnection, the number of files sent and the name of the BBS that called. The Call Out Log does the same thing, and keeps track of the total time on-line on a month-to-month basis, allowing you to estimate you total phone bill for that month based on how many minutes you were on-line. By keeping an eye on this file, the Sysop can keep his or her monthly bill within budget by turning the Network off when reaching his or her limit for that month.

NetUpdates

This is simply the File Request system. It only works from Home Node to Remote Node. You can request a file by sending your Home Node NetMail specifying the file you want. The Home Node places the file on his Update Drive and places the current time and date, the filename and file type in the file sys.net.update. When the Remote Node calls the next time, the file will be sent along with the batch file.

DS2 Network Future

Currently, I'm working on the new release to the Programmers Manual. The original was only 14 pages and only covered some of the routines. Since v3.03, I've added a few mods and fixed some undocumented routines that are included in the New Manual. I've also added REL and SEQ file format layouts. The new manual will be done with GEOS v2.0 and will be available through the Network. Hardcopies will be laser printed in a bound Manual and will be made available for a small fee.

I've also been gathering Sysops from other BBS programs that run on the 64 and 128 to complete the long awaited Comm-Net (A FidoNet-like Networking for the 64 and 128, though not Fido compatible). I've been working with the programmers from Image v1.2a, DMBBS, C-Net 128 v6.0, Omni 128, and Color 64 to allow DS2 Network to convert each of these formats into DS2 Network format. This will allow DS2 Network to serve as a bridge for all these Networks until we can get together to discuss further development of a Comm-Net that everyone can convert to easily. This will give the 64 and 128 and exclusive Network where everyone can join regardless of their software.

This is a rather involved project and it may take a while to complete. So far I have the Image conversion to DS2 Network almost complete. I will then start on either Color 64 or DMBBS. Once all the 64 BBS's are netted, I'll begin the 128 conversions. Lee Loftis has something up his sleeve for the 128 folks, so I'm approaching the 64 side first. Lee is the new ML programmer for C-Net 128 and I'll be working with him on the 128 conversions.

Other future modifications will include a better File Request system running in both directions, compatibility with C-Net DS2 v3.0 when it's released, more than one Library for the Net Message Base, 9600+ baud compatibility and maybe Fido Net compatibility (At least for the CBM areas).

Again, if you're a Registered Sysop, all of these additions will be available through the Network free of charge. Extra Hardcopies of the Manual and replacement disks will be available for a small fee. Unregistered versions have the File Request routines disabled, no NetMaps, no 40/80 column Color Menus and no Programmer Guide.

DS2 Network v3.04 is shareware and the Registered version is copyrighted 1993 by Michael Bendure. Please support the shareware concept, the Commodore 64 and C-Net by Registering your software. I can be reached via any of the following methods:

Michael Bendure
92 Lee Ave Apt N3
Newark, Ohio 43055

Voice: (614)/522-1302
BBS #: (614)/522-6563
FidoNet: 1:226/1400
Internet: michael.bendure@csrnet.bbs.net
GEnie: M.BENDURE
DS2 Net: Mitron @ Cygnus X-1

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Over The Edge

By Charles A. Christianson

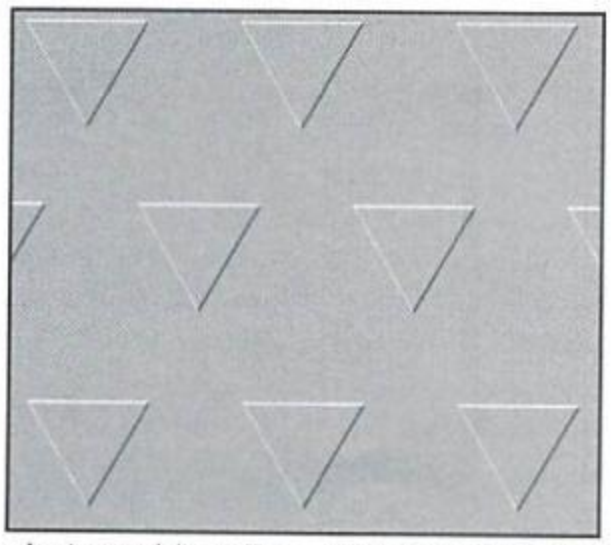
THE LIQUIDATION SAGA CONTINUES

As the world watches in amazement, giant pieces of a comet plunge into Jupiter's atmosphere producing a spectacle never before seen by human eyes. As amazing as this is for the many millions of people who are interested in science and astronomy, a smaller segment of the world's population waits to see the outcome of the bidding war that has ensued as a result of the liquidation of one of the computer industry's most established computer manufacturers: Commodore. There's no headline on the evening news, no special reports, no interviews with Tom Brokaw. But then, they're tied up with important topics that don't get enough coverage, like the O.J. fiasco.

Details on the status of the liquidation have been sketchy at best, at least until today, July 19th. In an article by Dan Stets of the Philadelphia Inquirer, much light was shed on the legal haggling and negotiations going on in the Bahamas between the liquidation trustees and the lawyers representing the major creditors.

In his article, Mr. Stets unveiled the remaining known bidders. The first is a management team from Commodore's own subsidiary in the United Kingdom, which by the way was the only unit of the company that was still profitable when Commodore closed. The second is Samsung Electronics of Korea, a consumer electronics giant and subsidiary of the Daewoo Corp. of Korea whom Commodore owes some $15 million. The remaining two are Amstrad Plc., a U.K. computer firm, and Phillips Electronics of the Netherlands.

Other companies listed as major creditors were Prudential Insurance Company of America and its subsidiary Pruco Life Insurance Company, who are owed a total of $28 million; and Anchor National Life Insurance Company of Los Angeles



who is owed $5 million. A list of creditors who make up the remaining balance of the $145 million debt has not been released.

In June, several of the bidders requested an extension of the bidding deadline so that they could put together their best offers. This motion was granted by the Bahamian courts and a July 15 deadline was set.

At the July meeting, the field was narrowed to the companies mentioned above. Good news? Maybe. But as you know, whenever a bunch of lawyers get together, nothing productive comes of it. Naturally the lawyers representing the creditors couldn't just accept a bid and move on. They instead motioned the court to move the proceedings, or have parallel proceedings conducted in a U.S. Bankruptcy Court.

It's my understanding that the American lawyers feel that the Bahamian Courts and liquidators are not capable of handling these proceedings. They're questioning the efficiency of the Bahamian legal system and its methods for handling bankruptcy. The actual point of contention seems to be that under U.S. Bankruptcy laws the creditors have more say over the final distribution of assets, while in Bahamian courts they merely have an advisory role with the courts making the final decisions. In short, it looks like we could be in for a long ride through the legal systems of both the U.S. and Bahamas.

One final piece of related information is that the creditors have expressed concern over actions taken by Commodore's management team shortly before and just after filing for liquidation in the Bahamas on May 2, 1994. Specifically, they wish to question the transfer of one subsidiary to another, and the conduct of Mehdi R. Ali, Commodore's former President.

It has been suggested that Ali tried to get Prudential and Daewoo to agree not to interfere in the liquidation proceedings by promising that they would get back about 50 cents on every dollar that Commodore owed them.

In a statement filed in the Bahamian Supreme Court by Stephen Richmond, an attorney representing the creditors, Ali allegedly claimed to have a foreign buyer for the company and that the sale would move along quickly if there was no interference by the Bankruptcy Courts in New York. When asked specific questions about the buyer or the terms of the sale, Ali allegedly refused to comment.

When contacted at his home in Ridgefield, CT., it was stated that Ali shouted, "You're intruding on my home. I'll complain to your editor. You're an idiot." Hmm... sounds like there might be something worth looking into.

So stay tuned for the next installment of "As CBM Turns" in upcoming issues of Commodore World. I hope that we have some good news to report in the next issue.

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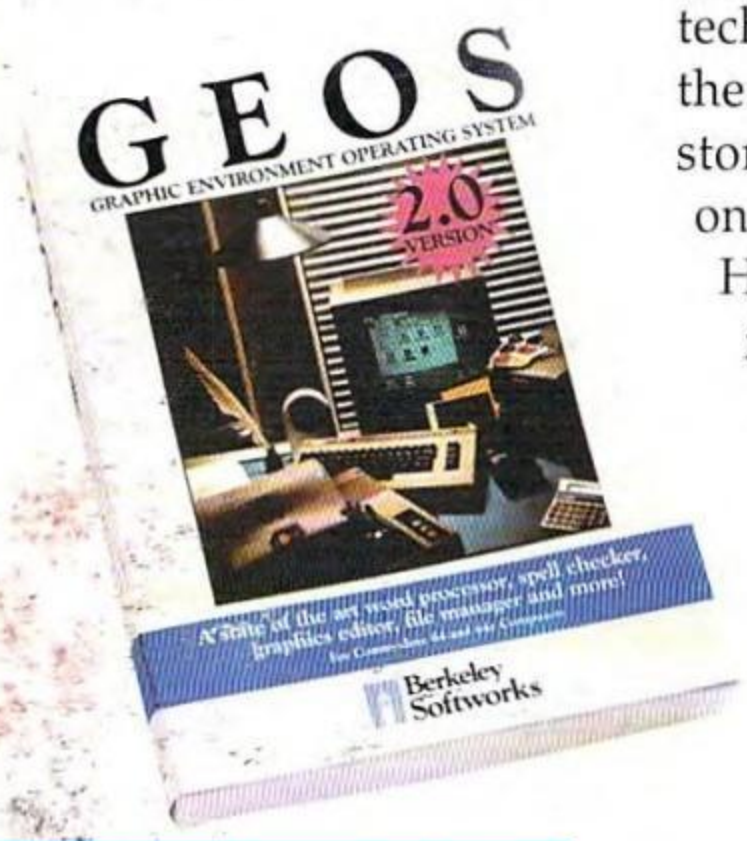

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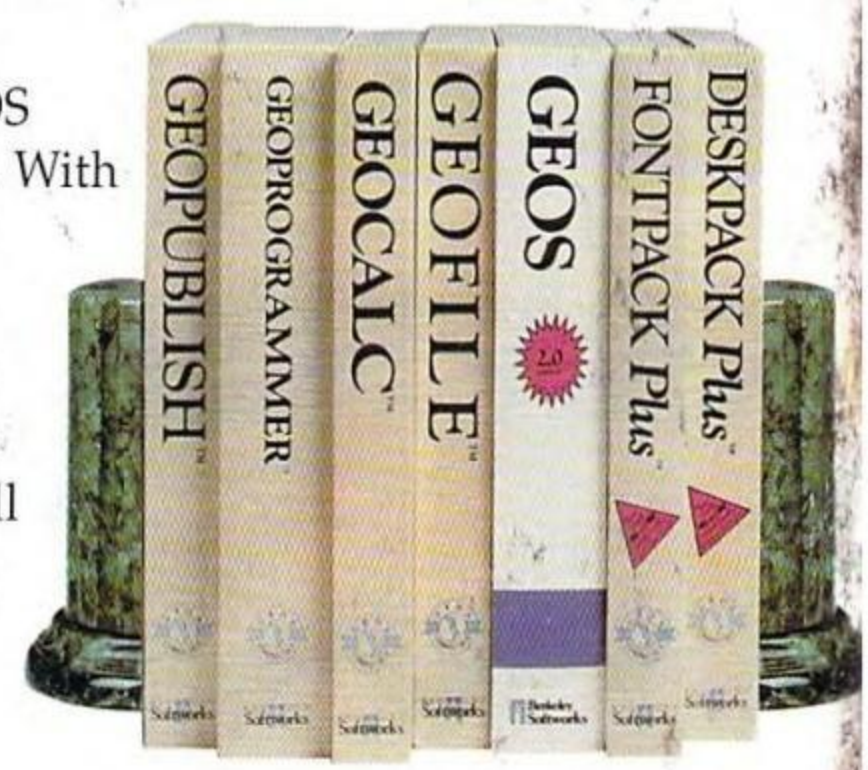

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